

Page 12. Par. 4 of the TM. Add the following information to subparagraph *c*: Case CS-79-N is a modification of CS-79-(*) and is electrically interchangeable with it. Case CS-79-N is capable of withstanding heavy rains.

The following mechanical improvements have been incorporated: (1) The cover is easily removable, (2) five catch clips have been added to hold down the cover securely, and (3) the connector cable has been replaced by a receptacle mounted on the recessed portion of the front panel. (Fig. 3B.2.)

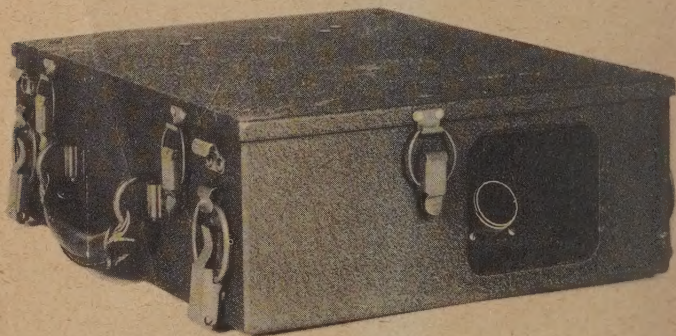


Figure 3B.2. Battery Case CS-79-N

Page 14. Par. 4 of the TM. Add the following information to subparagraph *h*:

The front panel of the Radio Receiver and Transmitter BC-659-K has been further weatherproofed as follows: (1) Hold-down catch clips at sides of front panel have been enlarged to evenly distribute the pressure exerted on the housing by the front panel. This assures even sealing between the front panel and the housing. (2) The indicating meter has been weatherproofed by the addition of a rubber gasket, a plexiglass gasket, and a steel reinforcing backplate between the front panel and meter. To replace the meter, remove the three nuts at the rear of meter rim. The meter's zero adjustment has been weatherproofed by the insertion of a bushing with a sealing plug to cover the adjustment hole. To zero set the meter, unscrew plug and proceed as usual.

(3) The shafts of the meter control switch, channel switch, and volume control switch have been further weatherproofed by substituting waterpump packing for the velutex gaskets. This packing is securely wrapped around the shaft and drawn tight by means of a packing gland.

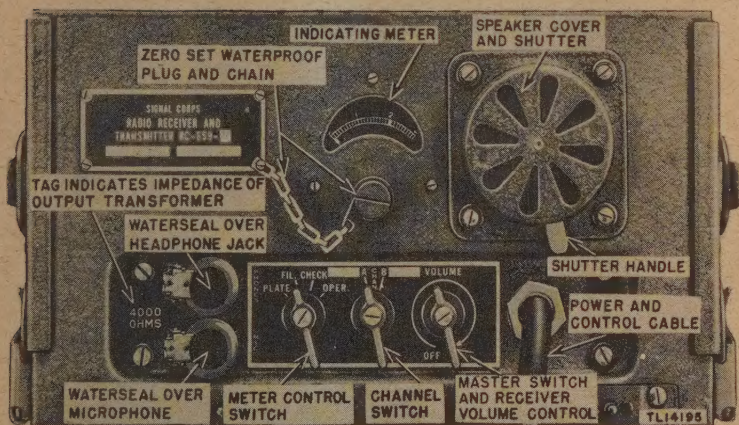


Figure 3B.3. Radio Receiver and Transmitter BC-659-K, Front Panel

Page 34 through 48, Paragraph 33.3 of Supplement dated 18 October 1944 to TM 11-615.

Make the following changes and additions.

Page 35, Par. 33.3. The following capacitor is interchangeable with C₆ and supplied on this order: Signal Corps stock number 3DA5-24; Capacitor, fixed, ceramic; .005 mfd., +80% -20%, 300 W-V d-c.

Page 41, Par 33.3. Assign Ref. symbol F₁ to Signal Corps stock number 3Z2587.3.

Page 42, Par. 33.3. Assign Ref. symbol J₁ to Signal Corps stock number 2Z5572.

Page 42, Par. 33.3. Assign Ref. symbol J₂ to Signal Corps stock number 2Z5571.

Page 42, Par. 33.3. Assign Ref. symbol SP₁ to Signal Corps stock number 2C5379A/52.

Page 44, Par. 33.3. Correct R21 to read as follows: Signal Corps stock number 3RC20AE103K, Resistor: carbon, 10,000 $\pm 10\%$, $\frac{1}{2}$ watt.

Page 45, Par. 33.3. Change R40 to read POTENTIOMETER: 1 meg.: includes SW3 and SW4.

Page 46, Par. 33.3. Add the following information below R42.

Ref.	Signal Corps Symbol Stock Numbers	Name and Description
R43	3Z5993-11	Resistor: wire wound; 3.3 ohms, $\pm 10\%$, $\frac{1}{2}$ watt.
R44		Resistor: Same as R3.
R45	3Z6022-14	Resistor: wire wound; 220 ohms; $\pm 10\%$; $\frac{1}{2}$ watt.
R46	3Z6018-4	Resistor: wire wound; 180 ohms; $\pm 10\%$, $\frac{1}{2}$ watt.

Page 48, Par. 33.3 Assign Ref. symbol P3 to Signal Corps stock number 2Z7111.23.

Page 48, Par. 33.3. Assign Ref. symbol R48 to Signal Corps stock number 3Z5996-9.

Page 48, Par. 33.3 Assign Ref. symbol R47 to Signal Corps stock number 3Z6803A3-9.

Page 48, Par. 33.3. Assign Ref. symbol SW14 to Signal Corps stock number 3Z9835.

33.3 MAINTENANCE PARTS LIST FOR RADIO RECEIVER & TRANSMITTER BC-659-K

Ref. symbol	Signal Corps stock Number	Name of part and description	Quan. per BC-659-K	Running spares	Orgn stock	3rd ech	4th ech	5th ech	Depot stock
	2Z4868.135	GASKET, meter: neoprene; $2\frac{1}{16}$ " diam. overall; $\frac{3}{32}$ " thick; openings for meter scale and zero reset. 3 mounting holes evenly spaced on 2.437" diam. Admiral #P616-125; (Weatherproofs meter front).	1			*	*	*	*
	2Z4868.95	GASKET, rubber: black neoprene; $11\frac{1}{16}$ " long x $6\frac{1}{16}$ " wide x $\frac{3}{32}$ " thick O.D.; $11\frac{3}{8}$ " long x $6\frac{3}{16}$ " wide I.D.; Galvin #32B49774.	1			*	*	*	*
	2Z6904-1	PACKING, fibre: graphite: $\frac{1}{8}$ " diam. x 3" long; Admiral #999-203-1; (Weatherproofs control shafts).	3			*	*	*	*
	2Z6959-17	PANEL, front: consists of panel, long catch clips, meter zero reset bushing and gaskets; mounting holes for 3" speaker; Admiral #G2038; (All parts staked or spotwelded to panel).	1						*
	2Z7093-23	PLATE, reinforcing: steel; 18 gauge x $2\frac{1}{16}$ " diam. overall; cadmium plated; 3 mounting holes spaced evenly on 2.437" diam. and tapped #3-48 machine screw; openings for meter zero reset and for meter scale; Admiral #202-402; (reinforce meter window).	1				*	*	*

33.3 MAINTENANCE PARTS LIST FOR RADIO RECEIVER & TRANSMITTER BC-659-K—(Cont.)

Ref. symbol	Signal Corps stock Number	Name of part and description	Quan. per BC-659-K	Running spares	Orgn stock	3rd ech	4th ech	5th ech	Depot stock
	2Z3351-40	PLUG ASSEMBLY, weatherproofing: consists of male plug W/ $\frac{5}{8}$ "-24 thread, $3\frac{1}{2}$ " long standard 000 safety chain, spring clip, neoprene gasket, brass retaining washer; Admiral #G2040.	1			*	*	*	*
	6C292-3	SPEAKER, dynamic: PM; 3" diam. cone; 4.8 oz. Alnico Bluedot Magnet; 3 ohms impedance at 1000 CPS. voice coil; $3\frac{1}{8}$ " square x $2\frac{3}{16}$ " deep overall; Admiral #P959-106; (Complete with neoprene gasket).	1			*	*	*	*
	6L50122	WASHER, cable: hard brass; $1\frac{1}{16}$ " O.D. x .031" thick x $\frac{3}{4}$ " I.D.; Admiral #P910-54; (Protects fibre washer).	1			*	*	*	*
	2ZA1352-51	WINDOW, meter: plexiglass; $2\frac{3}{16}$ " diam. overall x $\frac{1}{16}$ " thick; 3 mounting holes evenly spaced on 2.437" diam; openings for meter zero reset, $\frac{9}{16}$ " diam.; Admiral #952-120; (Weatherproofs meter front).	1			*	*	*	*

33.5 MAINTENANCE PARTS LIST FOR POWER SUPPLY UNIT PE-120-B.

Ref. symbol	Signal Corps stock Number	Name of part and description	Quan. per PE-120-B	Running spares	Orgn stock	3rd ech	4th ech	5th ech	Depot stock
	2Z7104-27	CAP, plug: black rubber; $\frac{3}{8}$ " cable hole and 1" connector hole; overall dimensions, $1\frac{3}{8}$ " diam. x $1\frac{1}{2}$ " long x $1\frac{1}{32}$ " high; Galvin #37A30251; (Insulates connector terminals).	1			*	*	*	*
	2Z1923-1	CATCH, clips: hold down type; small; $1\frac{1}{2}$ " long, steel; olive drab finish; Galvin #65A3415.	7			*	*	*	*
	2Z2727-1	CLIP, catch: hold down type; hook shaped; $\frac{7}{8}$ " long x $\frac{9}{16}$ " wide x $\frac{1}{4}$ " thick; Galvin #55A53416.	7			*	*	*	*
	2Z8678.68	CONNECTOR, female contact: $1\frac{1}{2}$ " square x $1\frac{1}{2}$ " deep; Amphenol #3102-20-7S.	1			*	*	*	*
	2Z4868.133	GASKET, connector: neoprene; $1\frac{1}{16}$ " square x $\frac{1}{16}$ " thick; $1\frac{1}{4}$ " diam. hole for connector; four mounting holes 1.156" centers; Admiral #P616-139; (Weatherseal between case and connector).	1			*	*	*	*
	2Z4868.134	GASKET, panel: neoprene; black; $14\frac{31}{32}$ " long x 12" wide x $\frac{9}{32}$ " thick; hole size $14\frac{5}{32}$ " long x $11\frac{3}{16}$ " wide; Admiral #P616-138; (Waterseal between housing and cover).	1			*	*	*	*

33.6 MAINTENANCE PARTS LIST FOR CASE CS-79-N.

Ref. symbol	Signal Corps stock Number	Name of part and description	Quan. per CS-79-N	Running spares	Orgn stock	3rd ech	4th ech	5th ech	Depot stock
	2Z7104-27	CAP, plug: black rubber; $\frac{3}{8}$ " cable hole and 1" connector hole; overall dimensions, $1\frac{3}{8}$ " diam. x $1\frac{1}{2}$ " long x $1\frac{1}{2}$ " high; Galvin #37A30251: (Insulates connector terminals).	3			*	*	*	*
	2Z1923-1	CATCH, clips: hold down type; small; $1\frac{1}{2}$ " long, steel; olive drab finish; Galvin #55A53415.	7			*	*	*	*
	2Z2727-1	CLIP, catch: hold down toey; hook shaped; $\frac{7}{8}$ " long x $\frac{9}{16}$ " wide x $\frac{1}{4}$ " thick; Galvin #55A53416.	7			*	*	*	*
	2Z8678.68	CONNECTOR, female contact: 8 contacts; $1\frac{1}{2}$ " square x $1\frac{1}{2}$ " deep; Amphenol #3102-20-7S.	1			*	*	*	*
	2Z4868.133	GASKET, connector: neoprene; $1\frac{1}{8}$ " square x $\frac{1}{16}$ " thick; $1\frac{1}{4}$ " diam. hole for connector; four mounting holes 1.156" centers; Admiral #P616-139; (Weatherseal between case and connector).	1			*	*	*	*
	2Z4868.134	GASKET, panel: neoprene; black; $14\frac{31}{32}$ " long x 12" wide x $\frac{9}{32}$ " thick; hole size $14\frac{5}{8}$ " long x $11\frac{3}{16}$ " wide; Admiral #P616-138; (Waterseal between housing and cover).	1			*	*	*	*

SUPPLEMENT

to

TECHNICAL MANUAL

RADIO SETS SCR-609-A and SCR-610-A

15 November 1943

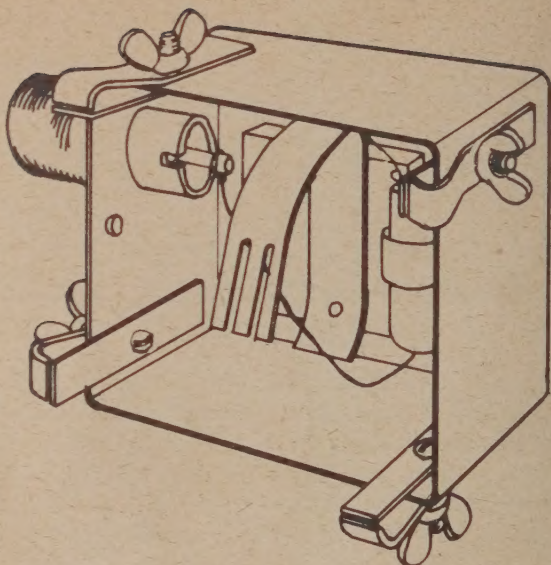
The following information, published on Order No. 16130-Phila-44-01, supplements TM 11-615, 15 November 1943. Personnel using the equipment and having custody of this technical manual will attach this supplement securely inside the front cover of the TM, and will enter suitable notations beside each changed paragraph and figure in the TM to indicate the presence of this supplementary information.

All references in TM 11-615 and its supplements to Radio Sets SCR-609-A and SCR-610-A are applicable to Radio Sets SCR-609-B and SCR-610-B. Page 10, Par. 4. Insert the following material after the second paragraph of paragraph 4b(2).

NOTE: Coaxial cable, Cordage CO-282, must be used when Radio Set SCR-610-() is to be installed in vehicles where more than 3 feet of antenna lead will be required to connect the radio set to the mast base.*

Terminal Box TM-210 (Antenna) and Terminal Box TM-211 (Antenna) are issued for use when coaxial cable, Cordage CO-282, is used as the antenna lead-in. Terminal Box TM-210 (Antenna) at the radio set, and Terminal Box TM-211 (Antenna) at the mast base, match the impedance of the coaxial cable to the normal output impedance of the radio set and the antenna.

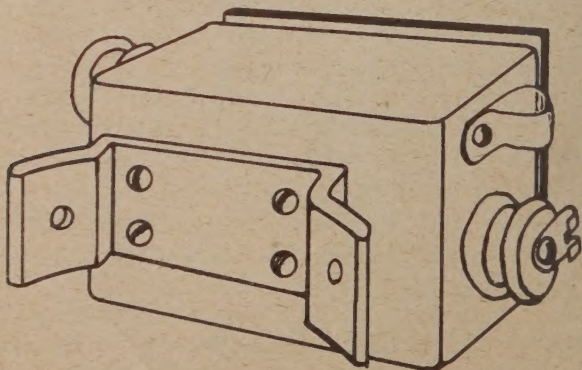
Terminal Box TM-210 (Antenna) is $2\frac{1}{2}$ inches square and $1\frac{1}{2}$ inches deep. It contains a spring contact mounted on a phenolic plate, a matching transformer, and a clamp which holds the transformer in place. Four clamps are mounted near the edges of the sides of the box and are held in place by wingnuts. On one side of the box is a cable connector into which the cable connector on the end of the coaxial cable will fit. The ground strip, attached to the inside of the box, is slotted at one end and has a hole at the other. It is $\frac{3}{8}$ inch wide by $1\frac{5}{8}$ inches long. See Fig. 7.1.



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FIGURE 7.1. Terminal Box TM-210 (Antenna)

Terminal Box TM-211 (Antenna) is 2 inches square and 1½ inches wide. It contains a matching transformer with leads coming out of it which connect to two terminal lugs on the outside of the box. It is filled with pitch and is thus permanently sealed. See fig. 7.2.



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FIGURE 7.2. Terminal Box TM-211 (Antenna)



FIGURE 7.3. Cordage CO-282—With Connector.

Cordage CO-282 consists of the necessary length of coaxial cable for the type of installation to be made. The length of this cable depends upon the distance between the radio set and the mast base, which in turn, is governed by the limits of the vehicle in which the equipment is to be installed. See fig. 7.3.

Page 21, Par. 5. Insert the following material after paragraph 5c(5).

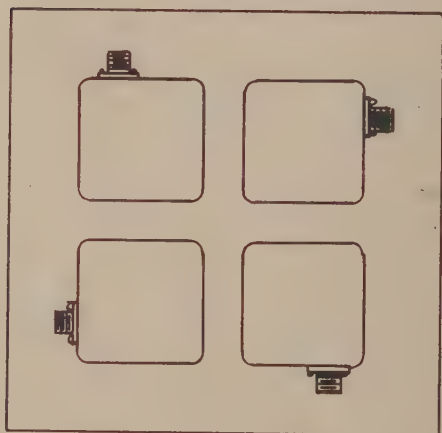
(6) Where more than 3 feet of antenna lead will be required to connect the radio set to the mast base, Cordage CO-282 must be used. Before installing the cable, attach the appropriate cable connectors to either end of the coaxial cable. Do this carefully. Make all solder joints tight and take every precaution to tape the ends, so that the outer covering of the cable will not fray out and moisture will not seep in.

d. Installation of Cordage CO-282.

The following illustrations include complete instructions for installing the terminal boxes for the cordage.

NOTE: Consult the installation instructions for the vehicle concerned.

(1) Figure 7.4 shows the different positions in which the terminal box can be mounted on the radio set, so that it can be set for the easiest and most direct connection of the cable from the radio set to the mast base. The correct position is the one that permits installation with the fewest possible bends in the cable.



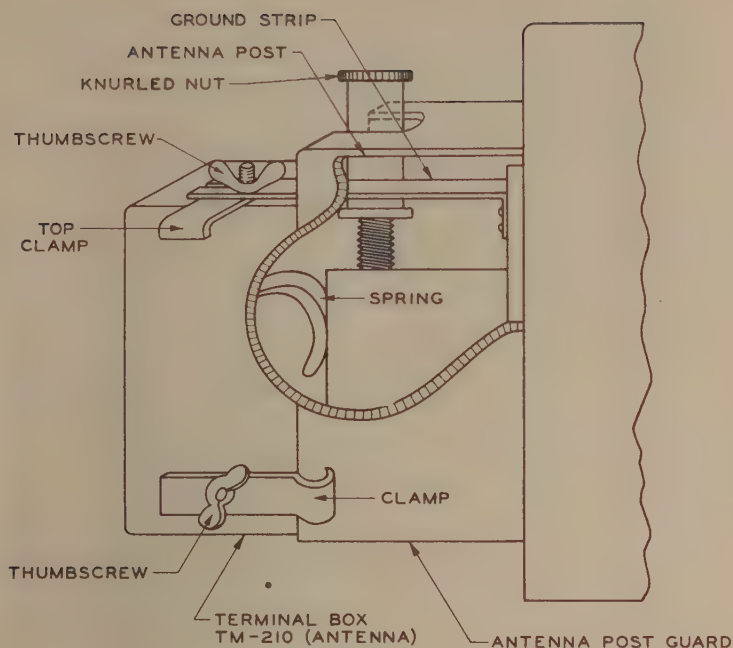
TL 11886

FIGURE 7.4. Four Mounting Positions of Terminal Box TM-210 (Antenna)

(2) Figure 7.5 contains complete instructions for mounting Terminal Box TM-210 (Antenna) to the radio set.

(3) Figure 7.6 describes the preparation of the mast base and the proper method for mounting Terminal Box TM-211 (Antenna).

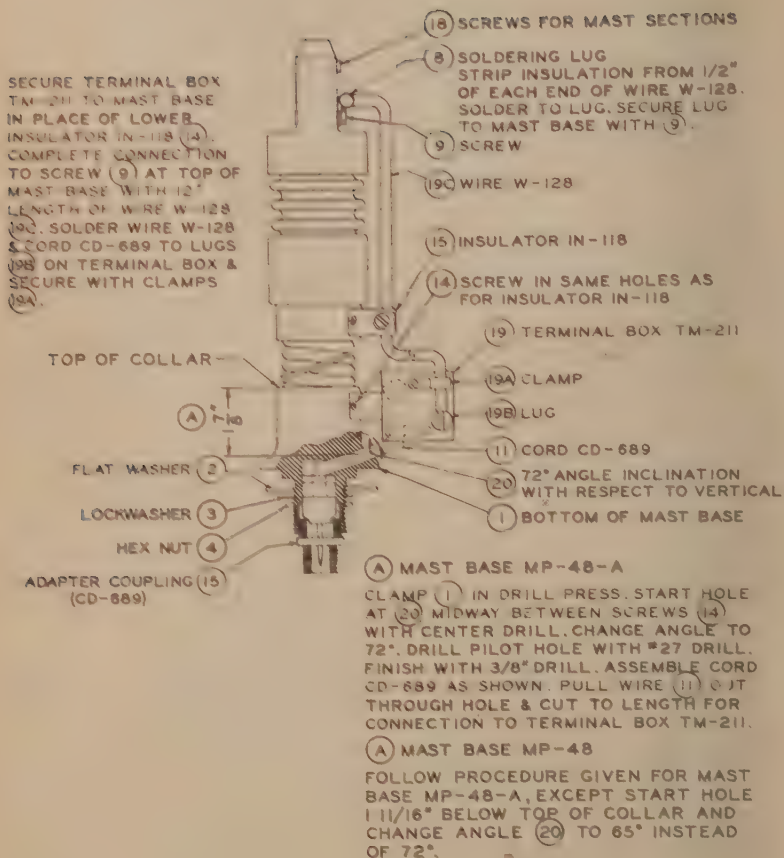
(4) Figure 7.7 explains the steps necessary in preparing the cable by fitting the connector to it.



1. REMOVE CHASSIS OF RADIO TRANSMITTER AND RECEIVER BC-659-(8) FROM CASE.
2. MOUNT GROUND STRIP, SECURING WITH UPPER RIGHT HAND SCREW IN ANTENNA POST GUARD.
3. TIGHTEN KNURLED NUT ON ANTENNA POST.
4. TURN TERMINAL BOX TM-210 FOR MOST DIRECT CONNECTION OF CORDAGE CO-282.
5. TURN TOP CLAMP SIDEWISE.
6. PRESS TERMINAL BOX INTO POSITION AGAINST ANTENNA POST GUARD AND SECURE SLOTTED END OF GROUND STRIP BENEATH WASHER WITH THUMBSCREW.
7. SECURE THE THREE REMAINING CLAMPS TO THE ANTENNA POST GUARD BY TIGHTENING THE THUMBSCREWS.

TL-13301

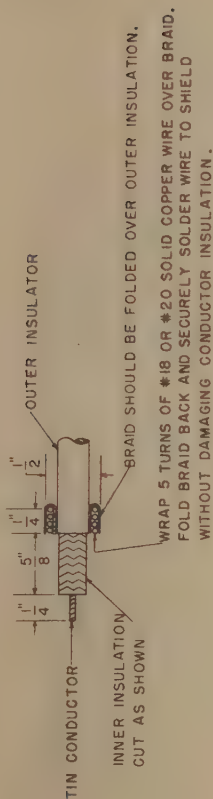
FIGURE 7.5. Method of Mounting Terminal Box TM-210 (Antenna) on the Radio Set



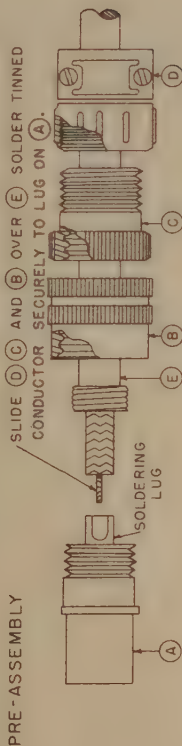
TL 10138

FIGURE 7.6. Method of Mounting Terminal Box TM-211 (Antenna) on the Mast Base

PREPARATION OF CORDAGE

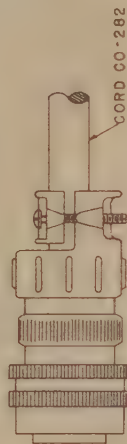


WRAP 5 TURNS OF #18 OR #20 SOLID COPPER WIRE OVER BRAID. FOLD BRAID BACK AND SECURELY SOLDER WIRE TO SHIELD WITHOUT DAMAGING CONDUCTOR INSULATION.



SLIDE (D) (C) AND (B) OVER CORDAGE (E), THEN SOLDER CONDUCTOR TO LUG ON (A).

ASSEMBLY



HOLD (A) FIRMLY. SCREW (C) TO (A) THEN (D) TO (C) FINALLY FASTEN CLAMP (D) OVER PREPARED BRAID (DO NOT CRUSH BRAID WHEN FASTENING CLAMP (D)).

FIGURE 7.7. Preparation of Coaxial Cable, Cordage CO-282

Page 32, Par. 9. Insert the following to the end of paragraph 9.

In Radio Receiver and Transmitter BC-659-J, manufactured on Order Nos. 16130-Phila-44 and 16129-Phila-44, capacitor C₇₂ has been replaced by Capacitor C₇₆, 0.03-μf, 400 volts dc.

The output transformer has been changed to provide an extra impedance-matching tap to accommodate a 250-ohm load in addition to the 4,000-ohm load.

A label located on the inside chassis wall indicates the manner in which the change of impedance should be made.

A reversible metal tag is mounted near the phone jack to indicate the impedance connections at the time the set left the factory. All impedance changes should be accompanied by a corresponding reversal of the tag.

Page 36, Par. 13. Insert the following statement immediately preceding paragraph 13.

NOTE: Failure or unsatisfactory performance of equipment will be reported on W.D., A.G.O. Form 468. If this form is not available, see TM 38-250.

Page 52, Par. 26. Delete paragraph 26 and substitute the following:

26. Alignment Indicator.

The alignment indicator consists of the essential components of Adapter M-339 permanently connected into Radio Receiver and Transmitter BC-659-J. The alignment indicator switch is mounted on a bracket on the end of the battery box. When the alignment indicator switch is at ALIGN, the receiver amplifier stage of the set is converted into a vacuum-tube voltmeter circuit, utilizing the meter on the front panel as an indicator. This makes possible the changing of channels as well as complete alignment of the set without using an external meter. When the alignment indicator switch is at OFF, the alignment indicator does not interfere with the normal use of the set.

Page 60, Par. 29. Delete paragraph 29 and substitute the following:

29. Presetting Procedure Using Alignment Indicator.

a. Check the alignment indicator before presetting. Set the OFF-ALIGN switch to ALIGN, VOLUME control full on, and note the panel meter reading. Turn the VOLUME control all the way back to the left from full on, and note the change in the meter reading. If the change is more than 1 division, try other VT-185 tubes in the receiver a-f power amplifier socket until one is found that is satisfactory. This tube should give a meter reading between 1.5 and

2.5. Next turn the VOLUME control full on. Note the meter reading with the probe free (held away from the set); then ground the probe to the *chassis*. If the meter reading does not increase at least 5 divisions, check Tube VT-185 and Battery BA-40. Replace either or both as necessary.

b. When the probe is not in use, place it in the Fahnestock clip. This clip is located on the bakelite strip held by the lower left speaker mounting screw (when viewed from the rear).

c. Set the OFF-ALIGN switch to ALIGN. Set switches SW₁ and SW₂ to the OFF positions. Set the panel meter switch to CHECK. Rotate the volume control *fully* clockwise (to the right) and set the CHAN switch to A or B, whichever is to be the lower frequency channel. *Remember that the lower frequency channel is to be preset first.* The receiver must be preset before the transmitter.

d. To preset the *receiver*, proceed as follows:

CAUTION: In adjusting the trimmers in the following operations, do not press the microphone switch. The trimmers need not be turned very far from the approximate settings shown in the chart. If it is necessary to turn them far from these settings, some adjustment has been incorrectly made, or the capacitors are defective. Recheck the previous steps, and examine the capacitors for breakage or misalignment of plates.

(1) Check crystal activity by inserting the probe in pin jack No. 1 of the metering socket. With the VOLUME control fully clockwise, the meter reading should approximate zero for good crystals.

(2) Insert the probe in pin jack No. 2 of the metering socket, and tune A1 (B1) for minimum on the meter.

(3) Tune A2 (B2) for maximum noise in the handset.

(4) Tune A3 (B3) for maximum noise in the handset.

(5) Tune A7 (B7) for maximum noise in the handset.

(6) Repeat steps (3), (4), and (5).

NOTE: In order to obtain a fine adjustment in steps (3), (4), and (5), it is recommended that the probe be inserted in pin jack No. 8 of the metering socket. Observe the meter for a slight dip at the maximum noise peak. VOLUME control should be full on.

e. To preset the *transmitter*, proceed as follows:

(1) Insert the probe in pin jack No. 3 of the metering socket. *Slowly* tune A4 (B4) about its approximate setting. More than one dip will be found. Choose the dip that gives the *minimum* reading on the meter and is still near the approximate setting. Tune A4 (B4) accurately for *minimum* in this dip.

NOTE: If it is difficult to distinguish the right dip, remove the first r-f amplifier Tube VT-179 (V5) for this step.

(2) Calibrate the meter. Battery BA-41 in the set *must* be in good condition. Note the meter reading with the probe held free. Then note the meter reading with the probe grounded to the *chassis*. Reduce the VOLUME control setting until the difference between the two readings is exactly $4\frac{1}{2}$ divisions. *Do not disturb the volume-control setting during the following operations.*

(3) Press the microphone switch and note the reading with the probe held free. Insert the probe in pin jack No. 4 of the metering socket. Then very carefully and slowly make a *slight* readjustment of A4 (B4) in the direction that brings the meter reading to *exactly 1 division* less than it was with the probe free. Listen in the receiver of the handset while making this adjustment. If a rushing background noise is heard, A4 (B4) has been moved too far. Go back to subparagraph e(1) above and tune for the correct dip again. Speak into the microphone. If your voice can be heard in the receiver of the handset, this step has been made correctly.

(4) Insert the probe in pin jack No. 5 of the metering socket, and tune A5 (B5) for minimum on the meter.

(5) Set the OFF-ALIGN switch to OFF. Place the probe in the Fahnestock clip on the speaker mounting screw. The rest of these adjustments will be made using the panel meter in its normal circuits.

(6) Set SW₁ to ON. Tune A6 (B6) for maximum reading on the panel meter.

(7) Set SW₂ to ON. Turn the panel meter switch to OPER. Quickly tune A7 (B7) for the minimum on the panel meter.

CAUTION: Do not press the microphone switch until the adjustment can be made swiftly, as the power-amplifier tube may be easily damaged during this adjustment.

NOTE: It should not be necessary to turn A7 (B7) more than

slightly from the setting made in sub-paragraph d (5) above, as A7 (B7) should already be part way into the dip. If the meter needle is not in the dip, A4 (B4) is probably adjusted to a false dip. It will therefore be necessary to go back to subparagraph (1) above and start over.

f. The lower frequency channel is now completely preset. Set SW₁ and SW₂ to OFF, panel meter switch to CHECK, and CHAN switch to the other channel. Preset this channel in the same manner, tuning the other set of trimmers.

g. Make sure that SW₁ and SW₂ are ON, replace the set in the case, and connect the antenna to be used. Recheck A7 (B7) for minimum. There is a covered opening at the rear top of the case for this purpose. The panel meter should now read between 1.8 and 3 (OPER).

Page 63, Par. 30. Delete subparagraph 30d and substitute the following.

d. The following alignment procedure uses Alignment Equipment ME-73 and the alignment indicator which is built into Radio Receiver and Transmitter BC-659-J.

(1) Check for the proper functioning of the alignment indicator as described in subparagraph 29a of this supplement.

(2) Insert the 4.3 megacycle crystal (part of ME-73) in either crystal socket, and set the CHAN switch accordingly. Set the OFF-ALIGN switch to ALIGN.

(3) Rotate the VOLUME control of Radio Receiver and Transmitter BC-659-J fully clockwise (to the right).

(4) Insert the probe in pin jack No. 3 of the metering socket. Adjust the secondary (bottom) and primary (top) of i-f transformers T₄, T₃ and T₂ in that order for minimum on the panel meter. (figs 4 and 10). If the meter goes to zero, reduce the volume-control setting.

(5) Readjust the primary and secondary of T₂, T₃, and T₄ in that order. The i-f amplifier is now aligned.

(6) Note the panel meter reading with the probe grounded to the chassis (VOLUME control full on). This is a zero voltage reading.

(7) Insert the probe in pin jack No. 7 of the metering socket. Adjust the secondary of the discriminator transformer T₅ until the

meter indication is the same (*with alignment tool removed*) as described in subparagraph (6) above.

8. Insert the probe in pin jack No. 8 of the metering socket, and adjust T₃ for minimum on the panel meter.

9. Check the secondary of T₃ as described in subparagraph (7) above, and readjust to zero volts if necessary. The discriminator is now aligned.

10. Turn the set off. Set OFF-ALIGN switch to OFF, and remove the 4.3 megacycle crystal. Place the probe in the Fahnestock clip on the speaker mounting screw. Replace the channel crystals in their proper sockets, and check the presetting adjustments for both channels. Return the set to its case.

Page 92, Par. 33. Reference number CH₂ has been changed and is the same as CH₄, page 93. CH₃, CH₅, and CH₆ remain the same as CH₂, originally indicated on page 92. This change is effective with Serial No. 1 of Radio Receiver and Transmitter BC-659-J.

Page. 164. Immediately after this page, insert page 164a which contains figure 24.3, schematic diagram for Radio Receiver and Transmitter BC-659-J.

Page 157, Par. 35. Add the following after paragraph 35.

36. General.

Power Supply Unit PE-120-A is a vibrator type, designed for connection to either a 6-volt, 12-volt or 24-volt vehicular battery. Hooks and catch clips are provided on the power supply housing, so that Radio Receiver and Transmitter BC-659-(*) can be mounted on top of, and secured to Power Supply Unit PE-120-A, and the entire assembly may in turn be fastened to Shock Mounting FT-250- * or Mounting FT-317-(*). Power Supply Unit PE-120-A is contained in a metal case with space provided for a spare vibrator and spare fuses. The vibrators are of the plug-in type for quick and easy replacement.

37. Installation and Operation.

Before connecting to vehicular battery, open the case and check the following items carefully.

- a. Connect link to terminal marked "BC-659." (See Figure 27.)
- b. Insert the correct vibrator for the voltage source to be used.

NOTE: Use Vibrator VB-12-A for 6-volt, Vibrator VB-13-A for 12-volt, and Vibrator VB-11-A for 24-volt operation. The vibrator must be changed when changing vehicular battery voltage.

c. Make sure voltage selector Plug P₁ is inserted in the proper position for vehicular battery voltage to be used.

d. Check to see that the vibrator, rectifier tube, regulator tube, and fuse, are properly installed in their respective receptacles.

e. Close the cover of Power Supply Unit PE-120-A and place Radio Receiver and Transmitter BC-659-(*) on top and fasten with catch clips provided.

f. Connect Power Supply Unit PE-120-A battery leads to vehicular battery and the unit is ready for operation.

IMPORTANT: Make sure that the proper link position and vibrator is used. Plug P₁ must be in proper position. If incorrect units are used, damage is sure to result.

38. Functioning of Parts.

Power Supply Unit PE-120-A is used to supply Radio Receiver and Transmitter BC-659-(*) with the correct operating voltage from a 6-volt, 12-volt or 24-volt vehicular battery. The schematic wiring diagram of Power Supply Unit PE-120-A is shown in Figure 30.

a. The battery supply leads are about 10 feet long. Low voltage power to the vibrator transformer is controlled by switches SW₃ and SW₄ on back of volume control in Radio Receiver and Transmitter BC-659-(*). The vibrator circuit is fused by Fuse F₁. Positive and negative leads to the vibrator transformer T₁ are filtered with capacitors C₁, C₂, C₆ and radio frequency choke RFC₁ to prevent hash from the vibrator plate rectifier units getting back into the vehicular battery leads.

b. Vibrator VIB-1 (6-volt), VIB-2 (12-volt), or VIB-3 (24-volt) is plugged into vibrator socket SO₁, alternately applies the vehicular battery voltage to first one side and then the other of the primary of the vibrator transformer T₁. The a-c voltage on the secondary of the vibrator transformer T₁ is applied to the rectifier, Tube VT-195 (V₁). The secondary winding (terminals 4 and 5) applies a-c voltage to the filament (socket pins 6 and 8) of rectifier Tube VT-195 (V₁). The high voltage from the secondary (terminals 1 and 3) of the vibrator transformer T₁ is applied to the rectifier, (socket pins 3

and 5) Tube VT-195 (V_1). Fixed capacitor C_5 is a buffer capacitor which prevents radio frequency voltages from being generated in the rectifier tube, and at the same time tunes the secondary of the vibrator transformer T_1 to the correct operating frequency. This operating frequency, at which vibrator VIB-1, VIB-2, or VIB-3 applies potential to the primary windings of vibrator transformer T_1 , is determined by the mechanical resonance of the reed in the vibrator unit. The vibrator is actuated by a coil which has its own independent contact on the vibrator reed, as indicated in the schematic diagram. (see fig. 30.)

c. The d-c output of the rectifier, Tube VT-195 (V_1) is applied through an r-f choke RFC_2 to the B+ filter choke CH_1 , and is filtered by capacitors C_7 and C_{10} . The filtered d-c voltage output (nominal) from Power Supply Unit PE-120-A appears at terminal No. 1 of choke CH_1 and is carried by the red lead to pin E of the power supply cable connector SO_2 .

d. The receiver B+ filament regulator, Tube VT-184 (V_2), is connected to terminal No. 1 of choke CH_1 through R_4 , and regulates the d-c voltage appearing at pin 5 of Tube VT-184 (V_2). It is regulated to approximately 90-volts, and is carried by the white lead to pin B of the power supply cable connector SO_2 .

e. The filament supply for Radio Receiver and Transmitter BC-659-(*) is obtained from Power Supply Unit PE-120-A. To supply the correct filament voltage to both receiver and transmitter, a filament regulator and resistor combination is used for operation from 6-volt, 12-volt or 24-volt vehicular battery. Plug P_1 is inserted into socket SO_3 , to connect the required components in the circuit for correct filament voltage.

(1) *Operation from 6-volt vehicular battery.* Plug P_1 is inserted into socket SO_3 , so that the notch in plug base is in line with 6V stamped on edge of chassis, connecting pin terminals Nos. 1 and 7 together which puts section A of Filament Regulator V_3 in series with the receiver filament circuit. The circuit is filtered by r-f choke RFC_3 , choke CH_2 and fixed capacitors C_4 and C_9 . The receiver filament circuit is connected to pin C of socket SO_2 . For transmitter filaments Plug P_1 connects pin terminals Nos. 8 and 4, of socket SO_3 , completing the circuit to pin F of socket SO_2 . The circuit is filtered by r-f choke RFC_3 .

(2) *Operation from 12-volt vehicular battery.* Plug P_1 is inserted into socket SO_3 , so that the notch in plug base is in line with 12V

stamped on edge of chassis, connecting pin terminal Nos. 1 and 5 together which puts section B, of Filament Regulator V_3 , in series with the receiver filament circuit. The circuit is filtered by r-f choke RFC_3 , choke CH_2 and fixed capacitors C_4 and C_9 . For transmitter filaments, Plug P_1 connects pin terminals Nos. 2 and 8 of socket SO_3 , thus connecting R_6 in series with transmitter filament circuit. The circuit is filtered by r-f choke RFC_3 .

(3) *Operation from 24-volt vehicular battery.* Plug P_1 is inserted into socket SO_3 , so that the notch in plug base is in line with 24V stamped on edge of chassis, connecting pin terminal Nos. 1 and 3 together which puts sections B and C of Filament Regulator V_3 in series with the receiver filament circuit. The circuit is filtered by r-f choke RFC_3 , choke CH_2 and fixed capacitors C_4 and C_9 . For transmitter filaments, plug P_1 connects pin terminals Nos. 2 and 6 of socket SO_3 , connecting R_6 and R_7 in series with transmitter filament circuit, filtered by r-f choke RFC_3 .

NOTE: Be darn sure the correct vibrator is inserted in vibrator socket SO_1 and the plug P_1 is inserted correctly for the vehicular battery source before connecting Power Supply Unit PE-120-A to the vehicular battery.

39. Maintenance.

a. Locating trouble within Power Supply Unit PE-120-A, the faulty component can be readily determined by making a continuity check with an ohmmeter. (See Figure 29 for voltage diagram of Power Supply Unit PE-120-A.) During the course of regular operation, from time to time, four components will need replacement. They are fuse F_1 (6 ampere), Vibrators VIB-1, VIB-2 and VIB-3, rectifier Tube VT-195 (V_1), voltage regulator Tube VT-184 (V_2) and filament regulator Tube (V_3). When defective, any of these components may be removed by pulling them from their sockets. The replacement should be inserted so that the pins line up properly with the socket holes, and it should be pushed down firmly to assure good contact.

NOTE: Vibrator VB-12-A (VIB-1) is used for 6-volt operation. Vibrator VIB-13-A (VIB-2) is used for 12-volt operation. Vibrator VB-11-A (VIB-3) is used for 24-volt operation. Be sure the correct vibrator is used.

b. Vibrator chassis is insulated from the main chassis. If the main chassis is removed from the housing, be sure to replace using the same length screws. Longer screws will ground the vibrator chassis to the main chassis.

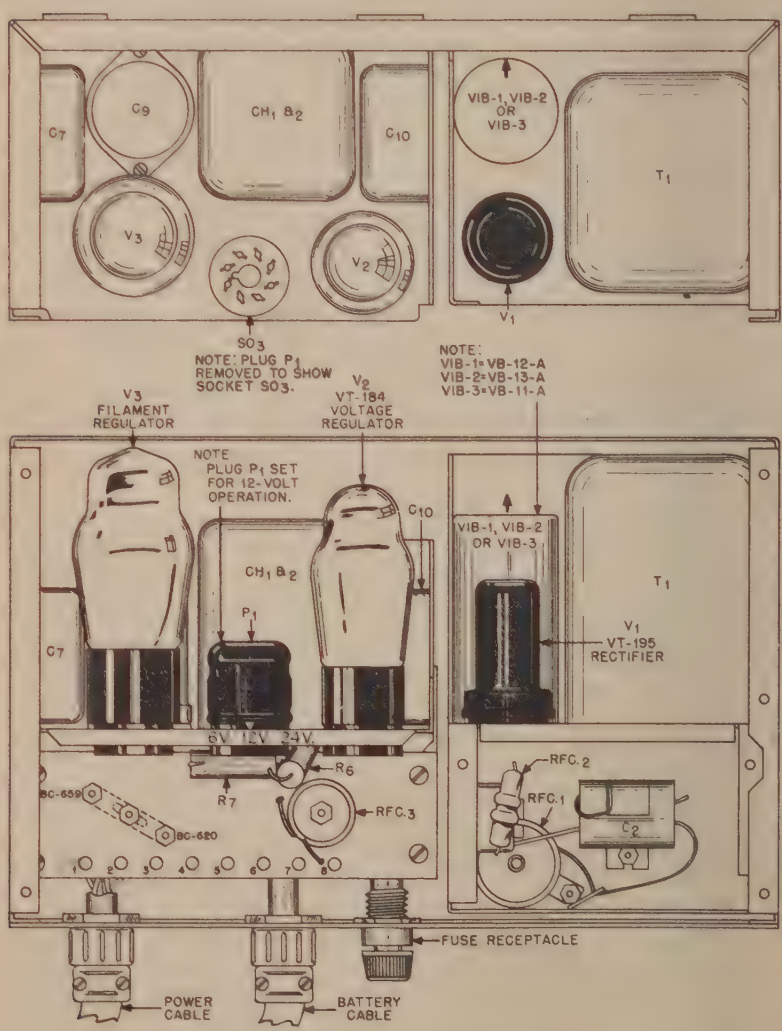


FIGURE 27. Power Supply Unit PE-120-A, Parts Location Detail

c. Power and control receptacle continuity measurements.

All measurements are made between receptacle contact H and contact indicated.

Receptacle contacts are identified by letters.

Receptacle Letter	Resistance		
	6 V. Operation	12 V. Operation	24 V. Operation
A	Open	Open	Open
B	Open	Open	Open
C	13 Ω	40 Ω	110 Ω
D	10 Ω	32 Ω	100 Ω
E	Open	Open	Open
F	10 Ω	58 Ω	170 Ω
G	Open	Open	Open

d. Normal choke and transformers d-c resistance values.

Description		D-C Resistance
RFC ₁	R-F choke	0.1 Ω
RFC ₂	R-F choke	9.5 Ω
RFC ₃	R-F choke	0.1 Ω
CH ₁	Choke "B" filter	200 Ω
CH ₂	Choke, filament	2 Ω
T ₁	Transformer	.....
	1-3	180 Ω
	4-5	0.8 Ω
	6-12	2.5 Ω
	7-11	0.6 Ω
	8-10	0.2 Ω

e. Power and Battery Cable Connections to Terminal Board.

Terminal No.	Color of Lead	Size of Lead	Source of Lead	Terminal Letter on Connector	Connection in BC-659-(*) or BC-620-(*)
1	Red	Small	Power cable	E	Transmitter B+
2	White	Small	Power cable	B	Receiver B+
3	Green	Small	Power cable	C	Receiver filament
4	Orange	Small	Power cable	G	Unused lead
5	Blue	Small	Power cable	F	Transmitter filament
6	Brown	Small	Power cable	H	A and B minus
	Green	Medium	Battery cable	Negative battery terminal	
7	Black	Large	Battery Cable	Negative battery terminal	
8	Black	Medium	Power cable	D	From ON-Off switch

33.1 MAINTENANCE PARTS LIST FOR RADIO SET SCR-609-()

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2S609()	RADIO SET SCR-609-().							*
	6Q349	ALIGNMENT TOOL TL-207.	1			*	*	*	*
	2A229C	ANTENNA AN-29-C.	1			*	*	*	*
	2Z1140	BOX BX-40: (for holding 120 crystals.)	1			*	*	*	*
	1F50GI-3.1	CABLE AND CONNECTOR ASSEMBLY: includes 8-pin socket and shell, Y cable, battery and plugs, housing bushing and gasket.	1		*	*	*	*	*
	2Z1876-()	CASE CS-76-() : for Remote Control Unit RM-29.	1		*	*	*	*	*
	3B879()	CASE CS-79-() : battery box.	1		*	*	*	*	*
	2Z3443.4	†CRYSTAL SET: consisting of 120 Crystal Holders FT-243-() with transmitter receiver crystal of frequencies varying from 27.0 mc to 38.9 mc in steps of 100 kc (channels No. 270 to 389, inclusive) for operating Radio Receiver and Transmitter BC-659-().			*	*	*	*	*

2B613-()	HANDSET TS-13-()	1							*	*	*	*
6D409A/1P	INSTRUCTIONS: Technical Manual TM 11-615A.	2							*	*	*	*
2C5379()	RADIO RECEIVER AND TRANSMIT- TER BC-659-()	1							*	*	*	*
2C7629()	REMOTE CONTROL UNIT RM-29-()	1							*	*	*	*
2Z9019()	STRAP ST-19: carrying.	1							*	*	*	*
3A27	BATTERY BA-27.	1					1		*	*	*	*
3A39	BATTERY BA-39.	1					1		*	*	*	*
3A40	BATTERY BA-40.	1					1		*	*	*	*
3A41	BATTERY BA-41.	1					1		*	*	*	*
2T177	TUBE VT-177-JAN 1LH4.	1					2		*	*	*	*
2T178	TUBE VT-178: JAN 1LC6.	1					2		*	*	*	*
2T179	TUBE VT-179: JAN 1LN5.	5					10		*	*	*	*
2T182	TUBE VT-182: JAN 3B7/4291.	2,					4		*	*	*	*
2T183	TUBE VT-183: JAN 1R4/1294.	1					2		*	*	*	*
2T185	TUBE VT-185: JAN 3D6/1299.	4					8		*	*	*	*

*Indicates stock available.

† Individual crystals may be ordered by giving above description and exact channel or operating frequency.

23 33.2 MAINTENANCE PARTS LIST FOR RADIO SET SCR-610-()

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per G/N 38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	6Q349	ALIGNMENT TOOL TL-207.	1			*	*	*	*
	2A229C	ANTENNA AN-29-C.	1	1	*	*	*	*	*
	2Z1876-()	CASE CS 76 () : for Remote Control Unit RM-29-(),	1						*
	3B879-()	CASE CS 79 () : battery box.			*				*
	2Z1890-137	CASE CS 137: (for holding 120 crystals.)	1						*
	2Z2651-423	CLAMP MC-423: for Mast Section MS 51.	1		*				*
	2Z2651-424	CLAMP MC-424: for Mast Section MS 52.	1		*				*
	3Z1375-1.1	CONNECTOR AND BONDINGUT: for power cord.	1			*	*	*	*
	3E1307A 5.5	CORD CD 307 A: 65"; for Headset HS- 30-(),	1		*				*
	3E1318A	CORD CD 318 A: for Microphone T-45-().	1		*				*
	3E1494	CORD CD 494: for Headset TS-13 ().	1		*				*
	3E1604	CORD CD 604: 10"; for Headset HS-30 ().	1		*				*

2Z3400-108	COVER RG-108; for Mast Base MP-48-A.	1	•	•	•	•	•	•	•	•
2Z3400-153	COVER RG-153; for Radio Receiver and Transmitter BC-659-().	1	•	•	•	•	•	•	•	•
2B613-()	HANDSET TS-13-().	1	•	•	•	•	•	•	•	•
6L7979	HARDWARE KIT; includes screws, nuts, washers, hook, and clamp.	1	•	•	•	•	•	•	•	•
2B830-U	HEADSET HS-30-U.	1	•	•	•	•	•	•	•	•
2B1300	INSERT M-300; for Headset HS-30-().	2	•	•	•	•	•	•	•	•
3C586	INSULATOR IN-86; for auxiliary antenna.	2	•	•	•	•	•	•	•	•
2A2088-48-A	MAST BASE MP-48-().	1	•	•	•	•	•	•	•	•
2A2351	MAST SECTION MS-51.	1	•	•	•	•	•	•	•	•
2A2352	MAST SECTION MS-52.	1	•	•	•	•	•	•	•	•
2A2353	MAST SECTION MS-53.	1	•	•	•	•	•	•	•	•
2B1645	MICROPHONE T-45.	1	•	•	•	•	•	•	•	•
2B1589-1	SHEET D. breath. for Microphone T-45-().	1	•	•	•	•	•	•	•	•
2Z6721-250()	MOUNTING FT-250-().	1	•	•	•	•	•	•	•	•

•Indicates stock available.

33.2 MAINTENANCE PARTS LIST FOR RADIO SET SCR-610-()-(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
3H4496-120A		POWER UNIT PE-120-A.	1		*	*	*	*	*
2C5379-()		RADIO RECEIVER AND TRANSMITTER BC-659-()	1		*	*	*		*
2C7629-()		REMOTE CONTROL UNIT RM-29-()	1		*	*	*		*
2Z8056A		ROLL BG-56-A: for antenna mast sections.	1		*	*			*
2Z9019		STRAP ST-19-()	2		*	*	*		*
3Z8209		SWITCH SW-209: for microphone T-45-()	1		*	*			
1B29		WIRE W-29: No. 16: single-conductor; weatherproof; 27-foot lengths.	1		*	*	*	*	*
1B128		WIRE W-128: No. 14: single-conductor; stranded aviation ignition cable without outer braid; 7-foot lengths.	1		*	*	*	*	*
3A27		BATTERY BA-27.	1	1		*	*	*	*
3A39		BATTERY BA-39.	1	1		*	*	*	*
3A40		BATTERY BA-40.	1	1		*	*	*	*
3A41		BATTERY BA-41.	1	1		*	*	*	*

2J1LH4	TUBE VT-177: JAN-1LH4.	1	2	*	*	*	*
2J1LC6	TUBE VT-178: JAN-1LC6.	1	2	*	*	*	*
2J1LN5	TUBE VT-179: JAN-1LN5.	5	10	*	*	*	*
2J1291	TUBE VT-182: JAN 3B7/1291.	2	4	*	*	*	*
2J1294	TUBE VT-183: JAN 1R4/1294.	1	2	*	*	*	*
2JVR9030	TUBE VT-184: JAN OB3/VR-90.	1	2	*	*	*	*
2J1299	TUBE VT-185: JAN 3D6/1299.	4	8	*	*	*	*
2J1005	TUBE VT-195: JAN 1005.	1	2	*	*	*	*
	ADD FOR INSTALLATION IN LIGHT ARMORED CAR M8.						
3G598	INSULATOR IN-98.	4		*	*	*	*
3G621	INSULATOR IN-121: antenna feed-thru.	2		*	*	*	*
6D15375-V17	INSTRUCTIONS: installation.	1		*	*	*	*
3H6713	VIBRATOR VB-13.	1		*	*	*	*
	ADD FOR INSTALLATION IN SCOUT CAR M3A1.						

*Indicates stock available.

33.2 MAINTENANCE PARTS LIST FOR RADIO SET SCR-610-()—(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	6D15350-V13	INSTRUCTIONS: installation.	1			*		*	*
	2A2090-50	MAST BASE BRACKET MP-50.	1				*	*	*
	2Z6721-429	REINFORCING PLATE FT-429; for Mast Base Bracket MP-50.	3				*	*	
	3H6713	VIBRATOR VB-13. ADD FOR INSTALLATION IN TANK RECOVERY VEHICLE T2.	1			*	*	*	*
	6D15350-V22	INSTRUCTIONS: installation.	1			*	*	*	*
	3G611	INSULATOR: IN-111: 2½"; for lead-in.	1		*	*			*
	3H6711	VIBRATOR VB-11. ADD FOR INSTALLATION IN UTILITY CAR M-20 (T26).	1		*	*	*	*	*
	3E2282	CORDAGE CO-282: 8-foot lengths.	1		*	*			*
	3H6713	VIBRATOR VB-13.	1		*	*	*	*	*
	3G598	INSULATOR IN-98.	2		*	*			*

3G621	INSULATOR IN-121.	2						*
6D15425-V63	INSTRUCTIONS: installation. ADD FOR INSTALLATION IN TRUCK, 1½ TON, 6 x 6, PERSONNEL CARGO CARRIER.	1		*	*	*	*	*
3H6712	VIBRATOR VB-12.	1			*	*	*	*
6G15425-V62	INSTRUCTIONS: installation.	1			*	*	*	*
3G621	INSULATOR IN-121.	1			*			*
3Z1250.39	MAST BASE BRACKET: (SC-D-8579).	1				*	*	*
2Z6721-499	MOUNTING BRACKET FT-499.	2				*	*	*
2Z5727	TERMINAL BOX KIT: includes terminal box per SC-D-8129, connectors, clamps, wires, etc.	1			*			*
2Z6721-429	REINFORCING PLATE FT-429. ADD FOR INSTALLATION IN TRUCK, ¼ TON, 4 x 4.	1						*
2Z6721-419	BRACKET FT-419: for FT-250-().	1						*
2Z6721-420	BRACKET FT-420: for FT-250-().	1						*

*Indicates stock available.

33.2 MAINTENANCE PARTS LIST FOR RADIO SET SCR-610-()—(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2Z1203-422	BRACKET FT-422; brush guard.	1						*
	6D14225-V26	INSTRUCTIONS; installation.	1			*	*	*	*
	2A2090-50	MAST BASE BRACKET MP-50.	1						*
	2Z6721-429	REINFORCING PLATE FT-429-() : for Mast Base Bracket MP-50.	2						*
	3H6712	VIBRATOR VB-12.	1			*	*	*	*
		ADD FOR INSTALLATION IN TRUCK, ¼ TON, 4 x 4, AMPHIBIAN.							
	3E1509	CORD CD-509; power cord.	1		*	*			*
	6D15300-V11	INSTRUCTIONS; Installation.	1			*	*	*	*
	2A2090-60	MAST BASE BRACKET MP-60.	1						*
	3H3947(')	MOUNTING FT-317-().	1						*
	3H6713	VIBRATOR VB-13.	1			*	*	*	*
		ADD FOR INSTALLATION IN TRUCK, ¾ TON, 4 x 4, COMMAND							

6D15175-V15	INSTRUCTIONS: installation.	1	*	*	*	*	*
2Z1250.27	BRACKET.	1		*	*	*	*
3H6713	VIBRATOR VB-13.	1		*	*	*	*
	ADD FOR INSTALLATION IN TRUCK, $\frac{3}{4}$ TON, 4 x 4, CARRYALL.						
2Z4643	FRAME FM-43.	1					*
6D12610(-) V14	INSTRUCTIONS: installation.	1		*	*	*	*
2A2090-50	MAST BASE BRACKET MP-50.	1		*	*	*	*
2Z6721-449	MOUNTING BRACKET FT-449.	1		*	*	*	*
2Z6721-450	MOUNTING BRACKET FT-450.	1		*	*	*	*
2Z6721-429	REINFORCING PLATE FT-429: for MP-50.	1		*	*	*	*
3H6712	VIBRATOR VB-12.	1		*	*	*	*
	ADD FOR INSTALLATION IN CARRIER, PERSONNEL, HALF TRACK M3.						
3E1509	CORD CD-509: for power unit.	1		*	*	*	*

* Indicates stock available.

33.2 MAINTENANCE PARTS LIST FOR RADIO SET SCR-610-() (contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per CN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2Z4648	FRAME FM-48.	1				*	*	*
	6D5150-V12	INSTRUCTIONS; installation.	1			*	*	*	*
	2A2090-54	MAST BASE BRACKET MP-54.	1				*	*	*
	3H6713	VIBRATOR VB-13. ADD FOR INSTALLATION IN 3 IN. GUN MOTOR CARRIAGE M10 and M10A1.	1			*	*	*	*
	6D12610-V23	INSTRUCTIONS; installation.	1			*	*	*	*
	3H6713	VIBRATOR VB-13. ADD FOR INSTALLATION IN 76 mm. GUN MOTOR CARRIAGE T-70.	1			*	*	*	*
	6D12610-V65	INSTRUCTIONS; installation	1			*	*	*	*
	3G621	INSULATOR IN-121.	1			*	*	*	*
	3H6711	VIBRATOR VB-11. ADD FOR INSTALLATION IN CAR, HALF TRACK, M2A1.	1			*	*	*	*

3E1509	CORD CD-509: for power unit.	1	*	*	*	*	*
6D15110-V77	INSTRUCTIONS: installation.	1		*	*	*	*
3H6713	VIBRATOR VB-13. ADD FOR INSTALLATION IN CARRIER, PERSONNEL, HALF TRACK, M3A1.	1		*	*	*	*
6Z3147-1	CONNECTOR AND BONDNUT: Apple- ton, 1 No. 61004 and BL-50 respectively, or equal.	1		*	*	*	*
3E1509	CORD CD-509: for power cord.	1	*	*	*	*	*
3E2218	CORDAGE CO-218: for connecting BC- 606- () to BC-659- () ; 14-foot lengths.	1		*	*	*	*
2Z4648	FRAME FM-48.	1		*	*	*	*
6D15105-V68	INSTRUCTIONS: installation.	1		*	*	*	*
2C1738	INTERPHONE CONTROL BOX BC- 606- () .	1		*	*	*	*
2A2090-54	MAST BASE BRACKET MP-54.	1		*	*	*	*
2Z7155	PLUG PL-55.	1		*	*	*	*

*Indicates stock available.

33.2 MAINTENANCE PARTS LIST FOR RADIO SET SCR-610-() - (contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2Z7168	PLUG PL-68.	1			*	*		*
	3H6713	VIBRATOR VB-13.	1			*	*	*	*
		ADD FOR INSTALLATION IN CAR, HALF TRACK, M2.							
	3E1509	CORD CD-509: for power unit.	1		*	*			*
	6D15050-V10	INSTRUCTIONS: installation.	1			*	*	*	*
	2A2090-60	MAST BASE BRACKET MP-60.	1			*	*	*	*
	3H3947()	MOUNTING FT-317-() .	1			*	*	*	*
	2Z6721-418	SUPPORT FT-418.	1			*	*	*	*
	3H6713	VIBRATOR VB-13.	1			*	*	*	*
		ADD FOR INSTALLATION IN PERSONNEL CARRIER M5.							
	3E1509	CORD CD-509: for power unit.	1		*	*			*
	2Z4648	FRAME FM-48.	1				*	*	*

6D15105-V27	INSTRUCTIONS: installation.	1	*	*	*	*	*	*
2A2090-54	MAST BASE BRACKET MP-54.	1		*	*	*	*	*
3H6713	VIBRATOR VB-13. ADD FOR INSTALLATION IN CAR, HALF TRACK, M9A1.	1		*	*	*	*	*
3E1509	CORD CD-509; for power unit.	1	*	*	*	*	*	*
6D15600-V60	INSTRUCTIONS: installation.	1		*	*	*	*	*
3H3947()	MOUNTING FT-317-().	1		*	*	*	*	*
3H6713	VIBRATOR VB-13. ADD FOR INSTALLATION IN 75 mm. GUN MOTOR CARRIAGE M3.	1		*	*	*	*	*
3E2218	CORDAGE CO-218: 4-conductor; for connecting slip ring to interphone control in turret; 22-ft. lengths; (shielded).	1		*	*	*	*	*
2C1738()	INTERPHONE CONTROL BOX BC-606-().	1		*	*	*	*	*
6D12610()-V20	INSTRUCTIONS: installation.	1		*	*	*	*	*
3G604	INSULATOR IN-104.	3		*	*	*	*	*

*Indicates stock available.

33.2 MAINTENANCE PARTS LIST FOR RADIO SET SCR-610-() — (contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2Z125024	PLATE: for BC-606-() ; 4" x 4".	1				*	*	*
	2Z7155	PLUG PL-55: used with CO-218 and BC-606-().	1			*	*		*
	2Z7168	PLUG PL-68: used with CO-218 and BC-606-().	1			*	*		*
	3H6713	VIBRATOR VB-13. ADD FOR INSTALLATION IN 37 mm. GUN CARRIAGE M6. INSTRUCTIONS: installation.	1			*	*	*	*
	6D12610()-V18		1			*	*	*	*
	2A2090-50	MAST BASE BRACKET MP-50.	1				*	*	*
	2Z6721-448	MOUNTING BRACKET FT 448.	1				*	*	*
	3H6712	VIBRATOR VB-12.	1			*	*	*	*

33.3 MAINTENANCE PARTS LIST FOR RADIO RECEIVER AND TRANSMITTER BC-659-()

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2Z734	BLOCK: antenna mounting.	1			*	*	*	*

2Z1239	BRACKET: adjustment stop.					*	*	*
2Z1389	BUSHING: antenna; brass.					*	*	*
1F50G1-2	CABLE AND CONNECTOR ASSEMBLY.	1			*	*	*	*
C1	CAPACITOR: mica; 10- μ f; 300 v dc (working).	1		*	*	*	*	*
C2	CAPACITOR: variable; 35- μ f; (rotor lug on right side). See also C8.	2		*	*	*	*	*
C3	CAPACITOR: variable; 35- μ f; (rotor lug on left side). See also C7.	2		*	*	*	*	*
C4	CAPACITOR: variable; ceramic; 1- to 3.5- μ f. See also C5.	2		*	*	*	*	*
C5	CAPACITOR: same as C4.							
C6	CAPACITOR: mica; 10,000- μ f; 100 v dc (working). See also C10, C11, C17, C24, C36, C37, C43, C46, C47, C48, C49, C52, C53, C56, C57, C61, C62, C69, C71, and C72.	22		*	*	*	*	*
C7	CAPACITOR: same as C3.							
C8	CAPACITOR: same as C2.							

*Indicates stock available.

33.3 MAINTENANCE PARTS LIST FOR RADIO RECEIVER AND TRANSMITTER BC-659-()—(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
C9	3DA1-48	CAPACITOR: mica; 1,000- μ f; 300 v dc (working). See also C33, C38, and C41.	4			*	*	*	■
C10		CAPACITOR: same as C6.							
C11		CAPACITOR: same as C6.							
C12	3D9050V-29	CAPACITOR: variable; 50- μ f; (rotor wiper on left side). See also C34, C39, and C44.	4			*	*	*	*
C13	3D9050V-30	CAPACITOR: variable; 50- μ f; (rotor wiper on right side). See also C35, C40, and C45.	4			*	*	*	*
C14	3D9020-3	CAPACITOR: ceramic; 20- μ f $\pm$ 5%. See also C15.	2			*	*	*	*
C15		CAPACITOR: same as C14.							
C16	3D9250-24	CAPACITOR: mica; 250- μ f; 400 v dc (working).	1			*	*	*	*
C17		CAPACITOR: same as C6.							
C18	3D9050-35	CAPACITOR: mica; 50- μ f; 400 v dc (working).	1			*	*	*	*

33.3 MAINTENANCE PARTS LIST FOR RADIO RECEIVER AND TRANSMITTER BC-659-()--(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
C30	3D9050-36	CAPACITOR: mica; 50- μ f; 300 v dc (working)	1			■	*	*	*
C33		CAPACITOR: same as C9.							
C34		CAPACITOR: same as C12.							
C35		CAPACITOR: same as C13.							
C36		CAPACITOR: same as C6.							
C37		CAPACITOR: same as C6.							
C38		CAPACITOR: same as C9.							
C39		CAPACITOR: same as C12.							
C40		CAPACITOR: same as C13.							
C41		CAPACITOR: same as C9.							
C42	3D9025-20	CAPACITOR: mica; 25- μ f; 300 v dc (working).	1			*	*	*	*
C43		CAPACITOR: same as C6.							
C44		CAPACITOR: same as C12.							

40 33.3 MAINTENANCE PARTS LIST FOR RADIO RECEIVER AND TRANSMITTER BC-659- ()--(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per G/N-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
C72		CAPACITOR: same as C6.							
C73	3DA5-24	CAPACITOR: mica; 5,000- μ mf; 300 v dc (working).	1			*	*	*	*
	2Z1923	CLIP: catch; large.	4			*	*	*	*
CH1	3C362	COIL: r-f choke. See also CH4, CH7, CH9, and CH10.	5			*	*	*	*
CH2	3C362-1	COIL: r-f choke. See also CH3, CH5, and CH8.	4			*	*	*	*
CH3		COIL: same as CH2.							
CH4		COIL: same as CH1.							
CH5		COIL: same as CH2.							
CH6	3C362-2	COIL: r-f choke.	1			*	*	*	*
CH7		COIL: same as CH1.							
CH8		COIL: same as CH2.							
CH9		COIL: same as CH1.							

42 33.3 MAINTENANCE PARTS LIST FOR RADIO RECEIVER AND TRANSMITTER BC-659-()—(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2C5379A/G5	GASKET: speaker.	1			*	*	*	*
	2Z4922-1	HANDLE: carrying.	1			*	*	*	*
	3G1838	INSULATOR: antenna mounting block.	1			*	*	*	*
	2Z5572	JACK: microphone plug receptacle.	1			*	*	*	*
	2Z5571	JACK: phone.	1			*	*	*	*
	2Z5829	KNOB: control.	3			*	*	*	*
	2C5379A/S2	LOUDSPEAKER: pm; (3"; with voice coil).	1			*	*	*	*
	2Z7229-1	PLUG: 9-pin connector.	1			*	*	*	*
	2Z7229	PLUG: 5-pin; on battery box.	1			*	*	*	*
R1	3Z6270	RESISTOR: carbon; 2,700-ohm $\pm 5\%$, $\frac{1}{2}$ -watt.	1			*	*	*	*
R2	3Z6010-10	RESISTOR: carbon; 100-ohm $\pm 5\%$, $\frac{1}{2}$ -watt. See also R10.	2			*	*	*	*
R3	3Z6005-A5	RESISTOR: wire-wound; 56-ohm $\pm 10\%$; $\frac{1}{2}$ -watt.	1			*	*	*	*

R4	3Z6622	RESISTOR: carbon; 22,000-ohm $\pm 5\%$, $\frac{1}{2}$ -watt. See also R13.	2						*	*	*	*	*
R5	3RC20AE105K	RESISTOR: carbon; 1-meg. $\pm 10\%$. See also R6, R23, R33, R36, R39, and R42.	7						*	*	*	*	*
R6		RESISTOR: same as R5.											
R7	3RC20AE273K	RESISTOR: carbon; 27,000-ohm $\pm 10\%$, $\frac{1}{2}$ -watt. See also R11.	2						*	*	*	*	*
R8	3Z4525	RESISTOR: carbon; 1,000-ohm $\pm 10\%$, $\frac{1}{2}$ -watt. See also R20 and R22.	3						*	*	*	*	*
R9	3Z6568-2	RESISTOR: carbon; 0.1 0-ohm $\pm 10\%$, $\frac{1}{2}$ -watt.	1						*	*	*	*	*
R10		RESISTOR: same as R2.											
R11		RESISTOR: same as R7.											
R12	3RC20AE474K	RESISTOR: carbon; 470,000-ohm $\pm 10\%$, $\frac{1}{2}$ -watt. See also R19, R24, R27, R30.	5						*	*	*	*	*
R13		RESISTOR: same as R4.											
R14	3Z6020-7	RESISTOR: wire-wound; 200-ohm $\pm 5\%$; $\frac{1}{2}$ -watt. See also R18.	2						*	*	*	*	*

*Indicates stock available.

44 33.3 MAINTENANCE PARTS LIST FOR RADIO RECEIVER AND TRANSMITTER BC-659-()-(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
R15	3Z5992-1	RESISTOR: wire-wound; 2.2-ohm $\pm 10\%$, $\frac{1}{2}$ -watt.	1			*	*	*	*
R16	3Z5991-4	RESISTOR: wire-wound; 1-ohm $\pm 10\%$.	1			*	*	*	*
R17	3Z6620-65	RESISTOR: carbon; 20,000-ohm $\pm 5\%$, 1-watt.	1			*	*	*	*
R18		RESISTOR: same as R14.							
R19		RESISTOR: same as R12.							
R20		RESISTOR: same as R8.							
R21		RESISTOR: carbon; 10,000-ohm $\pm 10\%$.	1			*	*	*	*
R22		RESISTOR: same as R8.							
R23		RESISTOR: same as R5.							
R24		RESISTOR: same as R12.							
R25	3Z6727	RESISTOR: carbon; 270,000-ohm $\pm 10\%$. See also R37 and R38.	3			*	*	*	*
R26	3Z6615-1	RESISTOR: carbon; 15,000 ohm $\pm 5\%$.	1			*	*	*	*
R27		RESISTOR: same as R12.							

R28	3RC20AE821K	RESISTOR: carbon; 820-ohm $\pm 10\%$. See also R29, R32, and R35.	4	
R29		RESISTOR: same as R28.		
R30		RESISTOR: same as R12.		
R31	3Z6700-6	RESISTOR: carbon; 100,000-ohm $\pm 10\%$. See also R34 and R41.	3	
R32		RESISTOR: same as R28.		
R33		RESISTOR: same as R5.		
R34		RESISTOR: same as R31.		
R35		RESISTOR: same as R28.		
R36		RESISTOR: same as R5.		
R37		RESISTOR: same as R25.		
R38		RESISTOR: same as R25.		
R39		RESISTOR: same as R5.		
R40	2Z7262.2	POTENTIOMETER: 1 meg; includes SW2 and SW3.	1	
R41		RESISTOR: same as R31.		

*Indicates stock available.

33.3 MAINTENANCE PARTS LIST FOR RADIO RECEIVER AND TRANSMITTER BC-659- () (contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38- ()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
R42		RESISTOR: same as R5.							
	2Z8249	SHIELD: tube; aluminum; for Tube VT-178.	1			*	*	*	*
	2Z8678	SOCKET: crystal.	1			*	*	*	*
	2Z8637.1	SOCKET: tube; loctal.	14			*	*	*	*
	6L4910-32.16	STUD: antenna-mounting.	1			*	*	*	*
SW1	3Z9859-17	SWITCH: toggle; SPST. See also SW2.	2			*	*	*	*
SW2		SWITCH: same as SW1.							
SW5	3Z8311-1	SWITCH: channel. See also SW6, SW7, SW8, SW9, SW10, SW11, and SW12.	1			*	*	*	*
SW6		SWITCH: same as SW5.							
SW7		SWITCH: same as SW5.							
SW8		SWITCH: same as SW5.							
SW9		SWITCH: same as SW5.							
SW10		SWITCH: same as SW5.							

33.3 MAINTENANCE PARTS LIST FOR RADIO RECEIVER AND TRANSMITTER BC-659-() — (contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2C5379A/W3	WASHER: packing; (waterproof shaft bushing).	3			*	*	*	*
	2C5379A/W4	WIPER: antenna.	1			*	*	*	*
		NOTE: the following additional maintenance parts are to be added to the maintenance parts list for Radio Receiver and Transmitter BC-659-J only.							
C76	3DKA30-16	CAPACITOR: molded paper; 30,000- μ f $\pm$ 20%, 400 v dc (working). Replaces C72.	1			*	*	*	*
	2Z7111.23	PLUG: male, black; (connects adapter into metering socket).	1			*	*	*	*
	3Z5996-9	RESISTOR: fixed; wire-wound; 6.5-ohms $\pm$ 10%, $\frac{1}{2}$ -watt; (meter shunt).	1			*	*	*	*
	3Z6803A3-9	RESISTOR: fixed; carbon; 3.3 meg; $\pm$ 20%; 1/10 watt (r-f isolating).	1			*	*	*	*
	3Z9835	SWITCH: slide; dpdt; (OFF - ALIGN switch).	1			*	*	*	*
T6	2Z9632.170	TRANSFORMER: dual impedance; audio output. Replaces T6 (single impedance).	1			*	*	*	*

33.4 MAINTENANCE PARTS LIST FOR PLATE SUPPLY UNIT PE-117-()

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
C1	3DA500-39	CAPACITOR: paper; 500,000- μ mf +14% -6%; 200 v dc (working).	1			*	*	*	*
C2	3K4010311	CAPACITOR: mica; 10,000- μ mf $\pm$ 10%; 300 v dc (working). See also C3, C4, C5, C8, and C12.	6			*	*	*	*
C3		CAPACITOR: same as C2.							
C4		CAPACITOR: same as C2.							
C5		CAPACITOR: same as C2.							
C6	3DA5-24	CAPACITOR: mica; 5,000- μ mf +14% -6%; 300 v dc (working). See also C7.	2			*	*	*	*
C7		CAPACITOR: same as C6.							
C8		CAPACITOR: same as C2.							
C9	3DB1000-1	CAPACITOR: electrolytic; 1,000- μ f +150% -10%; 15 v (working).	1			*	*	*	*
C10	3D403A	CAPACITOR CA-403-A; electrolytic; 20-20 μ f +150% -10%; 400 v dc (working).	1			*	*	*	*

*Indicates stock available.

33.4 MAINTENANCE PARTS LIST FOR PLATE SUPPLY UNIT PE-117-()—contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
C11	3DA20-18	CAPACITOR: paper; 20,000- μ f, +14% -6%; 1,600 v dc (working).	1			*	*	*	*
C12		CAPACITOR: same as C2.							
	2Z1923	CLIP: catch; large.	4			*	*	*	*
	2Z1923-1	CLIP: catch; small.	2			*	*	*	*
CH1	2C362-3	COIL: r-f choke; hash filter. See also CH2.	2			*	*	*	*
CH2		COIL: same as CH1.							
CH3	3C362-4	COIL: choke; A filter.	1			*	*	*	*
CH4	3C362-1	COIL: r-f choke; B +.	1			*	*	*	*
CH5	3C362-5	COIL: choke; B filter.	1			*	*	*	*
	2Z3097	CONNECTOR: 8-prong; female.	1			*	*	*	*
	3E4300	CORD: 4-conductor; 10' long.	1			*	*	*	*
	3E4300-1	CORD AND CONNECTOR ASSEMBLY: 8-conductor; 2 foot length.	1			*	*	*	*
	3Z2606.3	FUSE FU-38: 6-amp; 250-v.	1			*	*	*	*

R1	2Z4922-1	HANDLE: carrying; leather.	1				*	*	*
	3Z6020-20	RESISTOR: carbon; 200-ohm $\pm 10\%$; 1-watt. See also R2.	2				*	*	*
R2		RESISTOR: same as R1.							
R3	3Z6002-12	RESISTOR: wire-wound; 20-ohm $\pm 10\%$; 1-watt.	1				*	*	*
R4	3Z5984	RESISTOR: wire-wound; 0.4-ohm $\pm 5\%$; 5-watt.	1				*	*	*
R5	3Z5997	RESISTOR: wire-wound; 7.5-ohm $\pm 5\%$; 10-watt.	1				*	*	*
R6	3Z6002B2	RESISTOR: wire-wound; 22-ohm $\pm 5\%$; 10-watt.	1				*	*	*
R7	3Z6100-44	RESISTOR: wire-wound; 1,000-ohm $\pm 5\%$; 10-watt.	1				*	*	*
	2Z8654.3	SOCKET: wafer; capacitor mounting.	1				*	*	*
	2Z8654.1	SOCKET: 4-prong; tube for vibrator.	1				*	*	*
	2Z8654	SOCKET: tube; octal.	3				*	*	*
T1	2Z9979-2	TRANSFORMER: power; changeover links for 6- and 12-v operation.	1				*	*	*
V1	3H6701A	VIBRATOR VB-7-C or VB-1-A.	1				*	*	*

*Indicates stock available.

33.5 MAINTENANCE PARTS LIST FOR POWER SUPPLY UNIT PE-120-A

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38- ()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	3E4300.1	CABLE AND CONNECTOR ASSEMBLY: 2 feet of 8-conductor, rubber covered cable, and 8-pin socket connector.	1			*	*	*	*
	3E4300	CABLE AND LUGS ASSEMBLY: 4 conductor, unshielded rubber covered; 10 foot lengths.	1			*	*	*	*
C1	3DA500-179	CAPACITOR: fixed; paper; 500,000 μf $\pm 20\%$; 100 v dc (working), encased in brass tubing. See also C2.	2			*	*	*	*
C2		CAPACITOR: same as C1.							
C3	3DB1.184	CAPACITOR: fixed; paper; 1 μf $\pm 20\%$, 100 v dc (working).	1			*	*	*	*
C4	3DA10-224	CAPACITOR: fixed; paper; 10,000 μf $\pm 14\%$ -6% ; 300 v dc (working). See also C6, C8, C11, C12, and C13.	6			*	*	*	*
C5	3DA5-129	CAPACITOR: fixed; paper 5,000 μf $\pm 14\%$ -6% ; 1,600 v dc (working).	1			*	*	*	*
C6		CAPACITOR: Same as C4.							

33.5 MAINTENANCE PARTS LIST FOR POWER SUPPLY UNIT PE-120-A—(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	5th ech	Depot stock
	2Z2728	CLIP: loop retainer; spring steel; loop on one end; (holds catch clip loop when not in use).	4			*	*	*
	2Z2728-1	CLIP: vibrator; (grounding clip for vibrator).	1					*
CH1 } CH2 }	3C317-33	COIL ASSEMBLY: choke; A+ and B+ filter; (CH1 and CH2 are combined in one shield).	1			*	*	*
RFC1	3C362-32	COIL: r-f choke.	1			*	*	*
RFC2	3C362-33	COIL: r-f choke.	1			*	*	*
RFC3	3C362-3	COIL: r-f choke.	1			*	*	*
F1	3Z1938	FUSE FU-38: 6 amp, 25 volt.	1	1	*	*	*	*
	3Z3275.4	FUSE-HOLDER: plastic for 3AG fuse.	1			*	*	*
	3G1100-35	MOUNTING: wafer; bakelite: (for capacitor).	1			*	*	*
P1	2Z7118.34	PLUG: voltage changeover; 8 prongs.	1			*	*	*

R1	3RC30AE821K	RESISTOR: fixed; carbon; 820 ohms $\pm 10\%$, 1 watt. See also R2.	2				*	*	*	*	*
R2		RESISTOR: same as R1.									
R3	3RC20AE153K	RESISTOR: fixed; carbon; 15,000 ohms $\pm 10\%$, $\frac{1}{2}$ watt.	1				*	*	*	*	*
R4	3Z6100-149	RESISTOR: fixed; wire-wound; 1,000 ohms $\pm 5\%$, 10 watt.	1				*	*	*	*	*
R5	3Z5995F6	RESISTOR: fixed; wire-wound; 5.6 ohms $\pm 5\%$, 1 watt.	1				*	*	*	*	*
R6	3Z6002E552	RESISTOR: fixed; wire-wound; 25 ohms $\pm 5\%$, 5 watt.	1				*	*	*	*	*
R7	3Z6005-98	RESISTOR: fixed; wire-wound; 50 ohms $\pm 5\%$, 5 watt.	1				*	*	*	*	*
SO1	2Z8659.6	SOCKET: tube; octal.	5				*	*	*	*	*
SO2	2Z3097	SOCKET AND SHELL: 8-contact socket, aluminum shell.	1				*	*	*	*	*
T1	2Z9625-24	TRANSFORMER: vibrator.	1				*	*	*	*	*
VIB1	3H6712A	VIBRATOR VB-12-A: 6 v; non-synchron- ous; single contact.	1				*	*	*	*	*

* Indicates stock available.

33.5 MAINTENANCE PARTS LIST FOR POWER SUPPLY UNIT PE-120-A—(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
VIB2	3H6713A	VIBRATOR VB-13-A; 12 v; non-synchronous; single contact.	1			*	*	*	*
VIB3	3H6711A	VIBRATOR VB-11-A; 24 v; non synchronous; single contact.	1			*	*	*	*
V1	2J1005	TUBE VT-195; JAN-1005.	1	1	*	*	*	*	*
V2	2JVR9030	TUBE VT-184; JAN-OB3/VR90.	1	1	*	*	*	*	*
V3	2V10T1	TUBE: Amperite 10T1; (voltage regulator).	1		*	*	*	*	*

33.6 MAINTENANCE PARTS LIST FOR CASE CS-79-()

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	1F50G1-3.1	CABLE AND CONNECTOR ASSEMBLY: includes 8-pin socket and shell; Y cable; battery plugs; housing bushing, and gasket.	1		*	*	*	*	*
	2Z1923-1	CLIP: cover catch; small.	2			*	*	*	*
	2Z2727	CLIP: hold-down; large.	4			*	*	*	*
	2Z2727-1	CLIP: hold-down; small.	2			*	*	*	*

2Z1923	CLIP: unit catch; large.	4	*	*	*	*	*
2Z4922-1	HANDLE: carrying; leather; with mounting screw.	1	*	*	*	*	*
2Z7229-2	PLUG: 4-prong; black phenolic.	1	*	*	*	*	*
2Z7229-3	PLUG: 5-prong; black phenolic.	1	*	*	*	*	*
2Z8799-240	SOCKET AND SHELL: 8-pin; (cable connector from battery supply).	1	*	*	*	*	*

33.7 MAINTENANCE PARTS LIST FOR HANDSET TS-13-()

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	3E1494	CORD CD-494.	1				*	*	*
	2Z7155	PLUG PL-55.	1				*	*	*
	2Z7168	PLUG PL-68.	1				*	*	*
	3Z6075-23	RESISTOR.	1				*	*	*
	3Z9650	SWITCH ASSEMBLY.	1				*	*	*
	6L6440-3.59	SCREW: machine; 4-40 x $\frac{3}{16}$ "; FHB.	2				*	*	*
	6L6448-3.9	SCREW: machine; 4-48 x $\frac{3}{16}$ "; BHB.	2				*	*	*
	6L6540-3.8	SCREW: machine; 5-40 x $\frac{3}{16}$ "; BHB.	2				*	*	*

*Indicates stock available.

NOTE: No initial distribution of the following parts will be made on the basis of this list, as Handset TS-13-() are of four manufacturing types, parts for which are not interchangeable.

Sufficient spare handsets are provided in depot and echelon stocks for six months replacements without repairs.

To conserve stocks of repair parts, defective handsets should be allowed to accumulate, and parts requisitioned only as required, for specific manufacturing types.

33.7 MAINTENANCE PARTS LIST FOR HANDSET TS-13-()—(contd)

Ref symbol	• Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
		HANDSET TS-13-A (Automatic Electric)							
	4B1109J/20	CAP: receiver.	1				*	*	*
	4B1109J/19	CAP: transmitter.	1				*	*	*
	4B1109J/12	CONTACT SPRING: receiver; center.	1				*	*	*
	4B1109J/13	CONTACT SPRING: receiver; outer.	1				*	*	*
	4B1109J/14	CONTACT SPRING: transmitter; center.	1				*	*	*
	4B1109J/15	CONTACT SPRING: transmitter; outer.	1				*	*	*
	2B613C/2	HANDLE: handset.	1				*	*	*
	2B611D/1	RECEIVER UNIT: handset.	1				*	*	*
	2B613A/25	SCREW: cord fastening.	1				*	*	*

4B1109J/3	TRANSMITTER UNIT: handset.	1	*	*	*	*	*	*
	HANDSET TS-13-B (Kellogg)							
4B1109K/20	CAP: receiver.		*	*	*	*	*	*
2B613B/9	CONNECTING RACK.		*	*	*	*	*	*
2B613B/2	HANDLE: handset.		*	*	*	*	*	*
2B613B/11	INSERT: brass; round.		*	*	*	*	*	*
4B1109K/5	MOUTHPIECE: transmitter.		*	*	*	*	*	*
2B611C/1	RECEIVING UNIT: handset.		*	*	*	*	*	*
4B1109K/7	RING: clamping; transmitter.		*	*	*	*	*	*
2B611B/3	TRANSMITTER UNIT: handset.		*	*	*	*	*	*
	HANDSET TS-13-E (American Microphone Co.)							
4B407-103	CAP: receiver.		*	*	*	*	*	*
4B408-102	CAP: transmitter.		*	*	*	*	*	*
4B442-142A	CONTACT SPRING: receiver; center.		*	*	*	*	*	*
4B442-604	CONTACT SPRING: receiver; outside.		*	*	*	*	*	*
4B442-142	CONTACT SPRING: transmitter; center.		*	*	*	*	*	*

*Indicates stock available.

33.7 MAINTENANCE PARTS LIST FOR HANDSET TS-13-()—(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	4B443-141	CONTACT SPRING: transmitter; outside.					*	*	*
	4B1001	HANDLE: handset.					*	*	*
	4B3054	RECEIVER UNIT.					*	*	*
	4B9854	TRANSMITTER UNIT.					*	*	*
		HANDSET TS-13-F (Federal, formerly International)							
	4B1109A.11/20	CAP: receiver.					*	*	*
	4B1109A.6/19	CAP: transmitter.					*	*	*
	4B1109A.11/12	CONTACT SPRING: receiver; center.					*	*	*
	4B1109A.6/13	CONTACT SPRING: receiver; outside.					*	*	*
	2B613F/7	CONTACT SPRING: transmitter; outside.					*	*	*
	2B613F/8	CONTACT SPRING: transmitter; center.					*	*	*
	2B613B/4	HANDLE: headset.					*	*	*
	4B3058	RECEIVER UNIT.					*	*	*
	4B1109F/3	TRANSMITTER UNIT.					*	*	*

33.8 MAINTENANCE PARTS LIST FOR HEADSET HS-30-U

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2B1300	INSERT M-300.	2			*	*	*	*
	3Z10161	TERMINAL TM-161.	4				*	*	*
	3Z10163	TERMINAL TM-163.	2				*	*	*

33.9 MAINTENANCE PARTS LIST FOR MAST BASR MP-48 OR MP-48-A

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2A2088-48/A1	ADAPTER ASSEMBLY: includes Binding Post TM-146; pin; coupling; insert retainer; insert; washer: (for Mast Base MP-48).				*	*	*	*
	3Z246	BINDING POST TM-146: (for Mast Base MP-48).				*	*	*	*
	2A2088-48/C6	CABLE CONNECTOR ASSEMBLY: includes wire plug; soldering plug; Wire W-128, 16½" long; (for Mast Base MP-48).				*	*	*	*
	2A2088-48/C1	CAP: brass or steel: 1" diam. x ⅝" high; (cover for plug case).				*	*	*	*

*Indicates stock available.

33.9 MAINTENANCE PARTS LIST FOR AMST BASE MP-48 OR MP-48-A — (contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2A2088-48/C9	CASE: plug; brass or steel; 0.990" diam. x 1 5/8" long.				*	*	*	*
	2A2088-48/C7	COLLAR: brass or steel; 1 1/2" diam. x 3/4" long; 15/16" hole; (for Mast Base MP-48).				*	*	*	*
	2A2088-48A/C1	COLLAR: phenolic; 1 1/4" diam.; 7/16" hole; (for Mast Base MP-48-A).				*	*	*	*
	2A2088-48/C4	CONNECTOR: cable; AN 3106-14-3ST plug and AN 3057-6 clamp; (for coaxial cable in Mast Base MP-48).				*	*	*	*
	2A2088-48/R8	INSERT: retainer; (for Mast Base MP-48).				*	*	*	*
	3H618	INSULATOR IN-118.				*	*	*	*
	3G1250-60	INSULATOR: ceramic; (for Mast Base MP-48-A).				*	*	*	*
	3Z12076-7	LUG: steel; roll-type; (for Mast Base MP-48-A).				*	*	*	*
	2A2088-48/M1	MAST SOCKET ASSEMBLY: includes upper socket retainer; insulator; lower insulator retainer; plug; Binding Post TM-146; (for Mast Base MP-48).				*	*	*	*

2A2088-48A/M1	MAST SOCKET ASSEMBLY: includes socket and upper insulator retainer; lower insulator retainer; insulator; hex head screws; asbestos washers; lug; set-screw; (for Mast Base MP-48-A).	*	*	*	*	*	*	*	*
2A2088-48/P1	PLUG: phenolic; brass or steel; $\frac{3}{4}$ " across flat; (for Mast Base MP-48).	*	*	*	*	*	*	*	*
2A2088-48/R7	RETAINER ASSEMBLY: includes outer spring retainers; inner spring retainers; springs; and setscrews; (for Mast Base MP-48).	*	*	*	*	*	*	*	*
2A2088-48A/R1	RETAINER ASSEMBLY: includes spring retainers; springs, split ring; and set-screws; (for Mast Base MP-48-A).	*	*	*	*	*	*	*	*
2A2088-48/N1	NUT: brass or steel; ($1\frac{3}{4}$ " across flat; $\frac{3}{16}$ " thick; $1\frac{3}{8}$ "-20 N. S.; for Mast Base MP-48).	*	*	*	*	*	*	*	*
6L3522-20-28S	NUT: steel; bonderized; ($1\frac{3}{4}$ " across flat, $\frac{3}{16}$ " thick, $1\frac{3}{8}$ "-20 N. S.); (for Mast Base MP-48-A).	*	*	*	*	*	*	*	*
6L3969-7	PIN: brass; 0.0595" diam. x $\frac{7}{16}$ " long; (for binding post of Mast Base MP-48).	*	*	*	*	*	*	*	*
6L6632-6-1.1	SCREW: machine; $1\frac{1}{2}$ " No. 6-32 RHB; (for insulator IN-118).	*	*	*	*	*	*	*	*

*Indicates stock available.

64 339. MAINTENANCE PARTS LIST FOR MAST BASE MP-48 OR MP-48-A—(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	5B14308-4-1.31	SCREW: set; cup-point; steel, 8-32 x $\frac{9}{32}$ " long.				■	*	*	*
	6L7968-7.353	SCREW: set; cone-point; steel, 10-32 x $\frac{1}{16}$ " long.				*	*	*	*
	2A2088-48/S1	SCREW: machine; steel or brass; $\frac{1}{8}$ " ball point; $\frac{1}{4}$ "-28 NF-2 thread; $\frac{9}{32}$ " thread length; (for Insulator IN-118).				*	*	*	*
	2A2088-48/W1	WASHER: steel or brass; ($3\frac{1}{4}$ " O.D; $1\frac{13}{32}$ " hole; $\frac{1}{4}$ " thick; two $\frac{1}{16}$ " holes; for Mast Base MP-48).				*	*	*	*
	2A2088-48/W2	WASHER: lock; steel; ($1\frac{5}{8}$ " OD, $1\frac{13}{32}$ " hole, $\frac{1}{16}$ " thick; for Mast Base MP-48).				*	*	*	*
	3G1250-3.1	WASHER: ceramic; ($1\frac{5}{16}$ " OD; $\frac{1}{16}$ " hole; $\frac{3}{16}$ " thick); (for Mast Base MP-48-A).				*	*	*	*
	1B128	WIRE W-128: (for Mast Base MP-48-A).				*	*	*	*
	2A2088-48/W5	WIRE AND PLUG ASSEMBLY: includes plug case; insulators; wire plug; soldering plug; Wire W-128; rubber washer; for Mast Base MP-48).				*	*	*	*
	6L7945-5.35P	SCREW: set; cone-point; steel; $\frac{5}{16}$ "-24 x $\frac{9}{32}$ " long; (for Mast Base MP-48).				*	*	*	*

6L7949-10.35P	SCREW: set; cone-point; steel; 10-32 x $\frac{5}{8}$ " long; (for Mast Base MP-48).				*	*	*	*	*
6L7965-5.358	SCREW: set; cone-point; steel; $\frac{5}{16}$ "-24 x $\frac{5}{16}$ " long; (for Mast Base MP-48-A).				*	*	*	*	*
6L7968-10.131S	SCREW: set; cup-point; steel; 10-32, $\frac{1}{2}$ " hex; (for Mast Base MP-48-A).				*	*	*	*	*
6L7968-5.358	SCREW: set; cone-point; steel; 10-32 x $\frac{5}{16}$ "; (for Mast Base MP-48-A).				*	*	*	*	*
6L58053	WASHER: steel; (3/14" OD x $\frac{3}{16}$ " thick; $1\frac{1}{16}$ " diam. hole).				*	*	*	*	*
6L70006P	WASHER: lock; SAE Reg; (for No. 6 screw).				*	*	*	*	*
6L72244	WASHER: lock; internal tooth.				*	*	*	*	*
6L54012-2	WASHER: rubber; (0.905"-0.940" diam.; $\frac{3}{8}$ " thick).				*	*	*	*	*

33.10 MAINTENANCE PARTS LIST FOR MICROPHONE T-45

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	2B1859/1	SHIELD: breath.	1				*	*	*
	2B1589	UNIT MICROPHONE MC-419.	1				*	*	*

*Indicates stock available.

33.11 MAINTENANCE PARTS LIST FOR MOUNTING FT-250-()

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Ordn stock	3d ech	4th ech	5th ech	Depot stock
	2Z8503-1	COLLAR: shock mount.	4	"		*	*	*	*
	6L3108-32.4S	NUT: steel; hex; 8-32.	4			*	*	*	*
	6L3232-36.1P	SCREW: machine, PHF, 8-32 x 1 1/2" (parallelized).	4			*	*	*	*
	2Z8503	SHOCK MOUNT: rubber; 1" diam.	8			*	*	*	*
	2Z8503-2	WASHER: steel; (1" diam; 0.171" hole; 0.062" thick).	8			*	*	*	*

33.12 MAINTENANCE PARTS LIST FOR INTERPHONE CONTROL BOX BC-606-()

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Ordn stock	3d ech	4th ech	5th ech	Depot stock
	2C617A/CA	CLAMP: mounting.				*	*	*	*
	2C1617A/C3	COVER: dust.					*	*	*
	2CT732/J1	JACK: head-set and microphone; (3-conductor).				*	*	*	*
	2C4480-682A/K1	KNOB: volume control; (1" x 1/2").				*	*	*	*
	2Z7288-3	POTENTIOMETER: 50,000-ohm.				*	*	*	*

2C6494A, R1	RECEPTACLE AND CAP; magnetic microphone.	*	*	*	*	*
3Z6200-6	RESISTOR: 2,000-ohm $\pm 10\%$; $\frac{1}{2}$ -watt.	*	*	*	*	*
2C4403A, S2	SWITCH: toggle; SPST.	*	*	*	*	*
4E9900-700A	TERMINAL STRIP: 8 pairs of contacts.	*	*	*	*	*

33.13 MAINTENANCE PARTS LIST FOR REMOTE CONTROL UNIT RM-29-()

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	3Z246	BINDING POST TM-146.	1		*	*	*	*	*
	3D275	CAPACITOR CA-275: paper; 4- μ f; 50 v. (working).	1		*	*	*	*	*
	3D389	CAPACITOR CA-389: paper; 1- μ f; 600 v. (working).	2		*	*	*	*	*
	2Z1876B	CASE CS-76-B: carrying; canvas.	1		*	*	*	*	*
	2C76229D C1	CORD CLAMP ASSEMBLY: anchor clamp.	2		*	*	*	*	*
	3E3163-42	CORD AND PLUG ASSEMBLY: microphone.	1		*	*	*	*	*

*Indicates stock available.

33.13 MAINTENANCE PARTS LIST FOR REMOTE CONTROL UNIT R-M29-()---(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	3E3162-42	CORD AND PLUG ASSEMBLY; receiver.	1	.		*	*	*	*
	4B454	CRANK GC-9; generator.	1		*	*	*	*	*
	4B838-()	GENERATOR GN-38-()	1		*	*	*	*	*
	2C7629D/H1	HANDLE (for Key Switch SW-185).	1		*	*	*	*	*
	2Z5533A	JACK JK-33-A; microphone.	1		*	*	*	*	*
	2Z5534A	JACK JK-34-A; headset.	1		*	*	*	*	*
	2C7629D/S2	KNOB AND SETSCREW: (for Switch SW-175).	1		*	*	*	*	*
	2Z7155	PLUG PL-55; receiver.	1		*	*	*	*	*
	2Z7168	PLUG PL-68; microphone	1		*	*	*	*	*
	4B3371	RINGER MC-131.	1		*	*	*	*	*
	2C7629D/S1	SCREW: thumb; panel mounting.	3		*	*	*	*	*
	3Z8175	SWITCH SW-175: anti-howl; 2-section.	1		*	*	*	*	*
	3Z8185	SWITCH SW-185; key; (5-section).	1		*	*	*	*	*

20 33-14 MAINTENANCE PARTS LIST FOR GENERATOR GN-38-()-(contd)

Ref symbol	Signal Corps stock No.	Name of part and description	Quan per GN-38-()	Running spares	Orgn stock	3d ech	4th ech	5th ech	Depot stock
	6L6832-6.5A	SCREW: machine; roundhead; No. 8-32 x $\frac{3}{8}$ "; generator assembly.	7				*	*	*
	6L6832-6.7A	SCREW: machine; flathead; No. 8-32 x $\frac{3}{8}$ "; generator assembly.	1				*	*	*
	6L6832-2.31S	SCREW: set; headless; cup-point; No. 8-32 x $\frac{1}{8}$ "; steel; crankshaft collar locking.	1				*	*	*
	6L73006	WASHER: lock; steel; std for No. 6 screw; generator contact spring assembly mtg.	2				*	*	*
	6L73008	WASHER: lock; steel, std for No. 8 screw; generator assembly.	7				*	*	*

*Indicates stock available.



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WAR DEPARTMENT TECHNICAL MANUAL

TM 11-615

RADIO SETS

SCR-609-A and SCR-610-A

WAR DEPARTMENT

15 NOVEMBER, 1943

WAR DEPARTMENT,
Washington 25, D. C., 15 November 1943

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Major General,
The Adjutant General

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(For explanation of symbols see FM 21-6.)

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SAFETY NOTICE

THE ANTENNA TERMINAL OF THIS RADIO RECEIVER AND TRANSMITTER MAY BE TOUCHED AT ANY TIME WITHOUT DANGER OF SHOCK.

BUT WHEN THE SET IS OUT OF ITS CASE, BE CAREFUL. 90 and 150 VOLTS D.C. ARE PRESENT AT SEVERAL POINTS ON TOP OF THE CHASSIS AS WELL AS UNDERNEATH IT.

DON'T REMOVE VIBRATOR POWER PACK COVER INSIDE THE PLATE SUPPLY UNIT PE-117-C, EXCEPT WHEN THE SET IS TURNED OFF OR WHEN THE CABLE CONNECTOR TO THE RADIO RECEIVER AND TRANSMITTER IS DISCONNECTED. THIS REMOVES THE HIGH VOLTAGE (150 VOLTS) FROM EXPOSED PARTS WITHIN THE INTERNAL VIBRATOR POWER PACK.

DESTRUCTION NOTICE

WHY To prevent the enemy from using or salvaging this equipment for his benefit.

WHEN When ordered by your commander, or when you are in immediate danger of capture.

HOW

1. Smash—Use sledges, axes, hand-axes, pick-axes, hammers, crowbars, heavy tools, etc.
2. Cut—Use axes, hand-axes, machete, etc.
3. Burn—Use gasoline, kerosene, oil, flame-throwers, incendiary grenades, etc.
4. Explosives—Use firearms, grenades, etc.
5. Disposal—Burn in slit trenches, fox holes, other holes. Throw in streams. Scatter.
6. **USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT.**

WHAT

1. Smash—
 - a. Radio Receiver and Transmitter BC-659-(*) housing, front metering panel, tubes, tube sockets, coils and transformers.
 - b. Plate Supply Unit PE-117-C housing, tubes, tube sockets and transmitters.
 - c. Case CS-79-(*) housing and batteries.
2. Cut—
 - a. Cut all wiring in the units to make it impossible to be rewired.
 - b. Cut up Cord CD-509, Wire W-29, W-126 or W-128 and cord on handset.
3. Bend and/or Break—
 - a. Mast Sections MS-51, MS-52 and MS-53.
 - b. Antenna AN-29-C.
 - c. Mounting FT-317-(*).
 - d. Mounting FT-250-(*).
4. Burn—
 - a. Technical Manual TM 11-615.
 - b. All wiring in units and cords.
5. Bury or Scatter—Any or all of the above pieces after breaking.

DESTROY EVERYTHING

This technical manual supersedes T M 11-615 dated Aug. 1, 1942, May 15, 1943, and T M 11-615A dated Jan. 12, 1943.

SECTION I—DESCRIPTION

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2 Power Requirements for Radio Receiver and Transmitter BC-659-(*)..	3
3 List of Components.....	4
4 Description of Components.....	9

1. General.

Important: This technical manual covers Radio Sets SCR-609-A and SCR-610-A. Where there are specific differences, as in operation, wiring or layout, each unit is described separately; otherwise they will be referred to as the *radio set*.



Figure 1. Radio Receiver and Transmitter BC-659-(*), With Case CS-79-(*)

Throughout this manual BC-659-(*) refers to BC-659-A, BC-659-B and BC-659-H; RM-29-(*) refers to RM-29-A and RM-29-B; MP-48-(*) refers to MP-48 and MP-48-A; FT-250-(*) refers to FT-250-A and FT-250-C; VB-1-(*) refers to VB-1-A and VB-1-B; VB-7-(*) refers to VB-7-A and VB-7-B; CS-79-(*) refers to CS-79-A and CS-79-B; FT-317-(*) refers to FT-317-A and FT-317-B; and CA-403-(*) refers to CA-403-A and CA-403-B. These parts are interchangeable regardless of suffix letter. The symbol (&) following a type number (ME-13-&) for example) indicates that the text applies to all models, regardless of suffix letter.

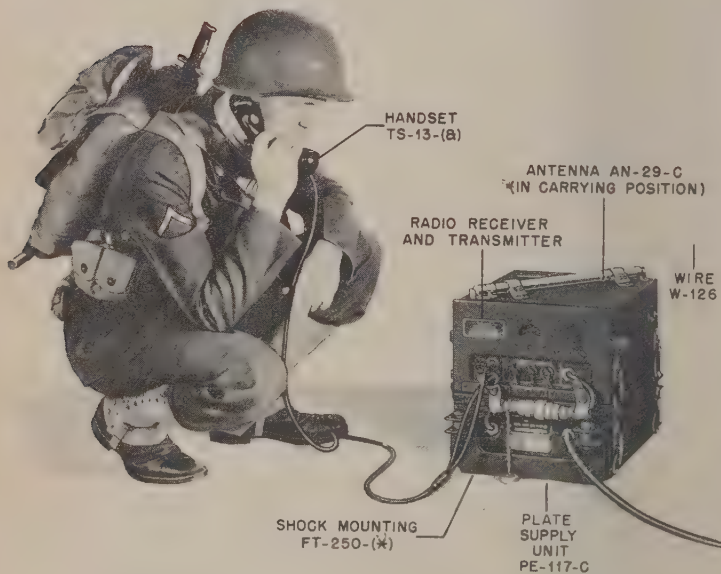


Figure 2. Radio Receiver and Transmitter BC-659-(*), With Plate Supply Unit PE-117-C

The *radio set* is a low power, portable, frequency modulated radio receiver and transmitter, powered by dry batteries or six or twelve volt vehicular batteries. The set is designed for two-way voice communication over short ranges. The extent of its operating range is approximately five miles. It may be operated fixed, portable, and portable mobile, either on the ground or mounted in a vehicle. (Figs. 1 and 2.)

NOTE: Radio Set SCR-609-A is intended for operation from stationary positions, but may be converted to SCR-610-A by the addition of the components for vehicular installation.

2. Power Requirements for Radio Receiver and Transmitter BC-659-(*).

a. Using Case CS-79-() (Batteries BA-39 and BA-40).*

(1) *Receiving, Using Battery BA-40.*

Rec. "A" Battery—1.5 volts, .94 ampere

Rec. "B" Battery—90 volts, 28 milliamperes

(2) *Transmitting, Using Battery BA-39 and Battery BA-40.*

Rec. "A" Battery—1.5 volts at .94 ampere

Rec. "B" Battery—90 volts at 48 milliamperes

Trans. "A" Battery—7.5 volts at .3 ampere

Trans. "B" Battery—150 volts at 50 milliamperes

(Reactance modulator and transmitter obtains its "B" voltage through the receiver from Battery BA-40.)

b. Using Plate Supply PE-117- C .

(1) 6.2 volts input:

Receiving—2.7 amperes (Approximately 17 watts)

Transmitting—3.25 amperes (Approximately 20 watts)

(2) 12.4 volts input:

Receiving—2.25 amperes (Approximately 28 watts)

Transmitting—2.6 amperes (Approximately 32 watts)

3. RADIO SETS SCR-609-(*) AND SCR-610-(*)—COMPONENTS

Signal Corps Stock Number	Quantity		ARTICLE	DIMENSIONS (Inches)					Unit Wt. (In Lbs.)
	SCR- 609-(*)	SCR- 610-(*)		Height	Width	Depth	Length	Diam- eter	
2A229C	1	1	Alignment Tool TL-150, Stock No. 6Q338-150 or TL-207, Stock No. 6Q349 Antenna AN-29-C	15½ 154			5¾ 5	1¾ 7⁄8 ½ ½	.09 .63
3A27	1	1	Battery BA-27 (for RM-29-(*))	4	67⁄16	3¾			7.25
3A39	1	1	Battery BA-39 (transmitter)	7½	33⁄8	1½			.80
3A40	1	1	Battery BA-40 (receiver)	73⁄8	5¼	41⁄16			6.50
3A41	1	1	Battery BA-41 (for BC-659-(*))	3½	23⁄8	2½			.66
2Z1140-()	1	1	Box BX-40-(*) (for holding quartz crystals, carried in Chest CH-96, part of Maintenance Eqpt ME-34-(*))	2½	10½	85⁄16			2.00
2Z9299-210		*	Box Terminal TM-210 (Antenna)						
2Z9299-211		*	Box Terminal TM-211 (Antenna)						
2Z6721-419		*	Bracket FT-419 (for FT-250-(*))						
2Z1203-420		*	Bracket FT-420 (for FT-250-(*))						
2Z1203-422		*	Bracket FT-422 (brush guard)						
2Z1250-27		*	Bracket						
		*	Bracket						
2Z1246-7	2	2	Bracket Assembly (for power cable) Galvin Mfg. Corp. No. 1X60858.						
		*	Cable WC-562, Stock No. 1F562 or Cordage CO-282, Stock No. 3E2282						
2Z1876 ()	1	1	Case CS-76-(*) (for RM-29-(*))	65⁄8	10	85⁄8			1.75
3B879 ()	1	1	Case CS-79-(*) (for Battery Supply)	4½	133⁄16	159⁄16			10.00

3. RADIO SETS SCR-609-(*) AND SCR-610-(*)—COMPONENTS—(Continued)

Signal Corps Stock Number	Quantity		ARTICLE	DIMENSIONS (Inches)				Unit Wt. (In Lbs.)
	SCR- 609-(*)	SCR- 610-(*)		Height	Width	Depth	Length	
2Z2651-423		2	Clamp MC-423 (for MS-51) 1 in use, 1 spare					
2Z2651 424		2	Clamp MC-424 (for MS-52) 1 in use, 1 spare					
3Z1375-1.1		*	Connector and bondnut (for power cord) Appletton Elec- tric Co. No. 61007 and BL-50, respectively.				2 3/8	.17
6Z3147-1		*	Connector and bondnut (for power cord) Appletton Elec- tric Co. No. 61004 and BL-50, respectively.					
3E1307A-5.5		1	Cord CD-307-A (65" long, for Headset HS-30-(*))					
3E1318A		1	Cord CD-318-A (for Microphone T-45)				96	1.50
3E1509		*	Cord CD-509 (for PE-120-(*))					
3E1604		1	Cord CD-604 (6" long for Headset HS-30-(*))					
3E1605		1	Cord CD-605 (for Headset HS-30-(*))					
3E1689		*	Cord CD-689 (for MP-48-A)					
3E2218		*	Cordage CO-218					
2Z3400-108		1	Cover BG-108 (for MP-48-A)					
2Z3400-153	1	*	Cover BG-153 (for radio set)					
		2	Fitting (used with Rope RP-5) 1 spare					
2Z4643		*	Frame FM-43					
2Z4648		*	Frame FM-48					
2B1567		2	Microphone Cover M-367 (for Microphone T-17) 1 in use, 1 spare					
		1	Hardware Kit, all screws, nuts, lockwashers, clamps, hooks, etc.					
2B613 ()	1		Handset TS-13-(*)					

3. RADIO SETS SCR-609-(*) AND SCR-610-(*)—COMPONENTS—(Continued)

Signal Corps Stock Number	Quantity		ARTICLE	DIMENSIONS (Inches)				Unit Wt. (In Lbs.)
	SCR- 609-(*)	SCR- 610-(*)		Height	Width	Depth	Diam- eter	
2B830 (*)		1	Handset HS-30-(*) Instructions, Installation (includes Drawings) for Radio Set SCR-609-(*) and SCR-610-(*) Installation Kit MC-450					
3G586		*	Insulator (used with Rope RP-5) 1 in use, 1 spare.					
3G601		*	Insulator IN-101 (for insulating antenna wire through metal partition) 1 5/8" long.					
3G611		*	Insulator IN-111 (for insulating antenna wire, through wall of tank) 2 5/8" long.					
3G621		*	Insulator IN-121 (for insulating antenna wire through wall of tank) 1 5/8" long.					
2A2088-48A		*	Mast Base Bracket MP-60	15			3 3/4	11.25
2A2090-50		1	Mast Base MP-48-A					
2A2090-54		*	Mast Base Bracket (Dwg. SC-D-8579)					
2A2351		*	Mast Base Bracket MP-50	5	5 1/4	8		4.25
2A2352		*	Mast Base Bracket MP-54					
2A2553		2	Mast Section MS-51, 1 in use, 1 spare	39 3/8			37 3/64	.28
2B1617		2	Mast Section MS-52, 1 in use, 1 spare	39 1/2			41 3/64	.57
2B1645		2	Mast Section MS-53, 1 in use, 1 spare					
2Z6721-250		1	Microphone T-17					
2Z6721-317		*	Microphone T-45					
		*	Mounting FT-250-(*)					
		*	Mounting FT-317-(*)	4 1/2	11 3/4	20		11.50
		*	Mounting Bracket FT-448					

3. RADIO SETS SCR-609-(*) AND SCR-610-(*)—COMPONENTS—(Continued)

Signal Corps Stock Number	Quantity		ARTICLE	DIMENSIONS (Inches)				Unit Wt. (In Lbs.)
	SCR- 609-(*)	SCR- 610-(*)		Height	Width	Depth	Diam- eter	
3H4496-120-(*)		*	Mounting Bracket FT-449					
		*	Mounting Bracket FT-450					
		*	Plate (for BG-606-(*))					
		1	Power Unit PE-120-(*) includes 2 Fuse, 6 amp. 25V. 3AG (Bass type), 1 in use, 1 spare					
2JVR9030			2 Tube (VR-90 30) FT. 184, 1 in use, 1 spare					
			2 Tube 1005 (VT-195) 1 in use, 1 spare					
2ZJ1005			2 Vibrator VB-7-(*), 1 in use, 1 spare					
		*	Plug PL-55 (used with CO-218 and BC-606-(*))					
2Z7155		*	Plug PL-68 (used with CO-218 and BC-606-(*))					
2Z7168		*	Radio Receiver and Transmitter BC-659-(*) includes 120 Crystals, Holder FT-243 with Crystal; 2 in use, 118 spare	6 ³ / ₄	13 ³ / ₁₆	14 ¹⁵ / ₁₆		
2C5379-(*)	1	1						
2Z3543								
3Z2586			1 Fuse, 1/4 amp. Littlefuse #1005					
2J1LH4			2 Tube (1LH4); VT-177, 1 in use, 1 spare					
2J1LC6			2 Tube (1LC6); VT-178, 1 in use, 1 spare					
2J1LN5			8 Tube (1LN5); VT-179, 5 in use, 3 spare					
2J1291			4 Tube (1291); VT-182, 2 in use, 2 spare					
2J1294			2 Tube (1294); VT-183, 1 in use, 1 spare					
2J1299			8 Tube (1299); VT-185, 4 in use, 4 spare					
2Z6721-429		*	Reinforcing Plate FT-249 (for MP-50)					
2C7629-(*)	1	1	Remote Control Unit RM-29-(*)	51 ¹ / ₄	9 ³ / ₈	61 ¹ / ₄		12.00
2Z8056A		1	Roll RG-56-A (for Antenna Mast Sections)	45	91 ¹ / ₄			1.50

3. RADIO SETS SCR-609-(*) AND SCR-610-(*) COMPONENTS (Continued)

Signal Corps Stock Number	Quantity		ARTICLE	DIMENSIONS (Inches)				Unit Wt. (In Lbs.)
	SCR- 609-(*)	SCR- 610-(*)		Height	Width	Depth	Length	
6Z7926		15 ft.	Rope RP-5					
2Z9019A	2	2	Support FT-478					
	2	2	Strap ST-19-A					
1B29 2Z2757			Technical Manual TM 11-615 (for Radio Sets SCR-609-(*) and SCR-610-(*)					
	27 ft.	27 ft.	Wire W-29 (for Auxiliary Antenna) Terminal Box Kit (Includes Terminal Box, per Dwg. SC-P-8129, connectors, clamp, wire, etc.	8½	2		60	.70
		*			5½			

An asterisk in the column headed "Quantity" indicates that the item is issued in quantities authorized, depending upon the type of installation to be made.

41f Power Unit PE-120-(*) is not available Plate Supply Unit PE-117-C (which includes necessary tubes and Vibrator VB-1, Capacitor CA-403-(*), Fuse FU-36, one each in use and one spare) may be used.

4. Description of Components.

a. Alignment Tool TL-150 or TL-207.

ALIGNMENT
TOOL TL-150

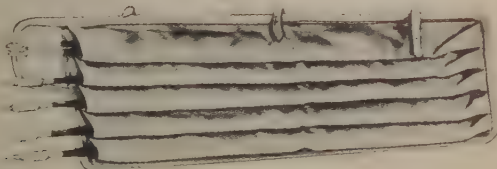


Alignment Tool TL-150 or TL-207 is used to make tuning adjustments when setting up new channels or retuning Radio Receiver and Transmitter BC-659-(*). Normally, this tool is carried in Case CS-79-(*). On TL-207 a hexagonal locknut wrench is incorporated to permit the loosening and tightening of trimmer locknuts for alignment.

b. Antenna.

ANTENNA AN-29-C

(1) Collapsible Antenna AN-29-C is provided for use with the radio receiver and transmitter when it is being operated as a fixed or portable unit. It may be quickly screwed to the antenna terminal which is located on the rear of the receiver and transmitter case. (Fig. 3A.) Antenna AN-29-C is strapped to the top of Radio Receiver and Transmitter BC-659-(*) when not in use. (Fig. 2).



ROLL BG-56-A



MAST BASE
MP-48



COVER BG-108



MAST
BRACKET
MP-50

(2) For vehicular service, a mast type antenna is issued with Radio Set SCR-610-A. Mast Section MS-53 is screwed into Mast Base MP-48-*, and Mast Section MS-52 into the top of Mast Section MS-53, followed by Mast Section MS-51. When not in service, the sections are stored in Roll BG-56-*. A length of Wire W-126 or W-128 is provided for connecting the antenna mast to the antenna terminal of the radio set. This lead should be *exactly three feet* from mast to antenna terminal.



WIRE
W-126

Be sure that the antenna conforms to these instructions and uses three mast sections and a three-foot lead-in. If not, the set's efficiency will be reduced on a number of frequencies.

Mast Base MP-48-* is designed so that it will bend without breaking, and resume an upright position after the antenna hits any obstruction. Don't tie down the antenna. Your signal strength will be reduced if it is tied down in a horizontal or inclined position. Keep it vertical.

For mounting Mast Base MP-48-* on the vehicle, Mast Brackets MP-50 or MP-54 is provided, while Cover BG-108 is used to cover Mast Base MP-48-* when not in use.

(3) In emergencies, it may be necessary to substitute a wire antenna for the mast. When this is done, the uninsulated end of the wire should be looped around the antenna terminal and fastened between the knurled nut and the square portion of the terminal. (Fig. 3B). *Remove all insulation from that portion of the wire which is to be secured under the nut.* A 27-foot length of insulated wire should be used for this purpose. (a full-wave antenna will also match the antenna network).

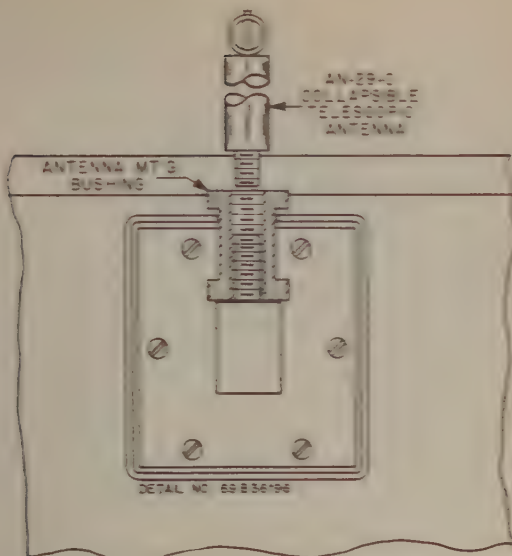


Figure 3A. Radio Receiver and Transmitter BC-654-A. Rear View, Showing Antenna AN-29-C, In Position

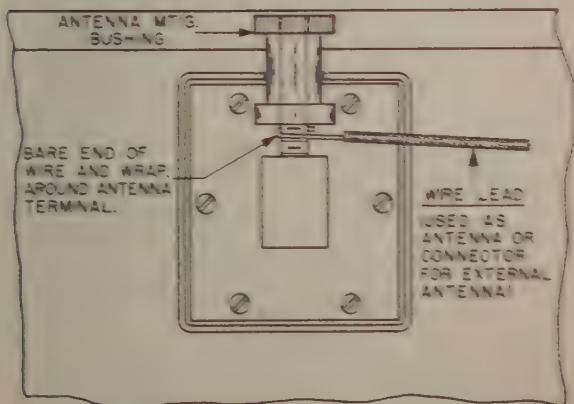
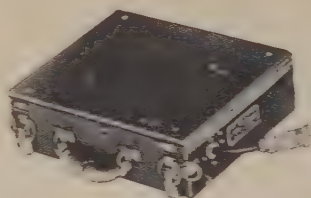


Figure 3B. Radio Receiver and Transmitter BC-654-A. Antenna Terminal Connections

c. Case CS-79-().***CASE CS-79-(*)**

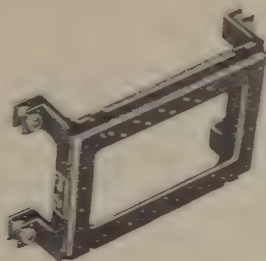
Case CS-79-(*) contains Batteries BA-39 and BA-40 supplying power for Radio Receiver and Transmitter BC-659- * for portable operation. The batteries are held securely in place with straps and space is provided for carrying the handset, alignment tool, and coil of insulated wire for use as an antenna. Figure 1 illustrates Case CS-79- * and Radio Receiver and Transmitter BC-659-(*) fastened together with the catch clips provided.

d. Connector and Bondnut.**CONNECTOR AND BOND NUT**

For vehicular installation the connector and bondnut are used to bring the "A" battery lead from Plate Supply Unit PE-117-C through a metal wall.

e. Cord CD-509.**CORD CD-509**

An 8-foot extension Cord CD-509 is used to connect Radio Receiver and Transmitter BC-659- * to Plate Supply Unit PE-117-C when units must be mounted apart 8 feet maximum, from each other. Issued only with Radio Set SCR-610-A.)

f. Mounting FT-250-().*

**MOUNTING
FT-250-(*)**

Mounting FT-250- * is used when the equipment is mounted in vehicles where it would be subjected to excessive vibration. The shock mounting is shown in figure 2, with the Radio Receiver and Transmitter BC-659- * and Plate Supply Unit PE-117-C in position. Holes are provided in the bottom cradle of Mounting FT-250- * so that it may be mounted to the vehicle with suitable screws or bolts. Issued only with Radio Set SCR-610-A.

g. Plate Supply Unit PE-117-C.

**PLATE SUPPLY UNIT
PE-117-C**

Plate Supply Unit PE-117-C is a vibrator type power supply issued only with Radio Set SCR-610-A and is so designed that it

may be connected to any 6 or 12 volt storage battery in any type of vehicle. Hooks and catch clips are provided so that the radio receiver and transmitter can be mounted on top of, and secured to Plate Supply Unit PE-117-C and the entire assembly may in turn be fastened to Shock Mounting FT-250-(*). This mounting is shown in figure 2. Unit may also be mounted separately by using another Mounting FT-317-(*). The power supply is contained in a case with room provided for carrying Handset TS-13-(&), a coil of insulated wire for connecting the mast to the antenna terminal of the radio set, extension Cord CD-509, and also a spare Fuse FU-38, Vibrator VB-7-(*), and electrolytic Capacitor CA-403-(*). The vibrator and capacitor are of the plug-in type for quick and easy replacement.

NOTE: Vibrator VB-7-() is interchangeable with Vibrator VB-1-(*).*

The inside of the power pack cover has a label which shows the correct changeover link connections that are required to adapt the unit for operation on either 6 or 12 volt storage batteries in vehicular equipment.

h. Radio Receiver and Transmitter BC-659-().*

The receiver and transmitter are on one chassis. The case is weatherproofed by the use of rubber and packing gaskets at all points where water might enter. A channel switch is provided on the front panel of the unit to permit rapid changing to either of the two pre-set frequencies, which are controlled by plug-in crystals.

One Battery BA-41 is contained in this unit. It is housed in a box behind the front panel.

Clips are provided to fasten the receiver and transmitter unit to either Battery Case CS-79-(*) or Plate Supply Unit PE-117-C.

Two brackets and two straps are provided on the top of the case for carrying the collapsible antenna.



**RADIO RECEIVER AND
TRANSMITTER BC-659-(*)**

Located on the front panels are the following controls:

(1) A jack marked MIC.

(2) A jack marked PHONES that cuts off the built-in speaker when the handset is plugged in.

(3) A meter control switch.

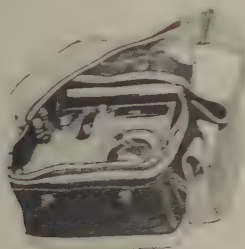
(4) A channel switch.

(5) An OFF-VOLUME control.

(6) An internal speaker.

(7) An indicating meter.

i. Remote Control Unit RM-29-()*



REMOTE CONTROL
UNIT RM-29-(*)

Remote Control Unit RM-29- * provides for communication at points remote from the location of the radio set, in conjunction with a field telephone unit.

SECTION II—INSTALLATION AND OPERATION

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5. Initial Procedure.

Unpack the equipment carefully to prevent damage or loss of components. Check against List of Components in paragraph 3. Also note the channels on which the receiver and transmitter are aligned. The radio set is aligned and set up on Channels 272 and 281 when shipped from the factory.

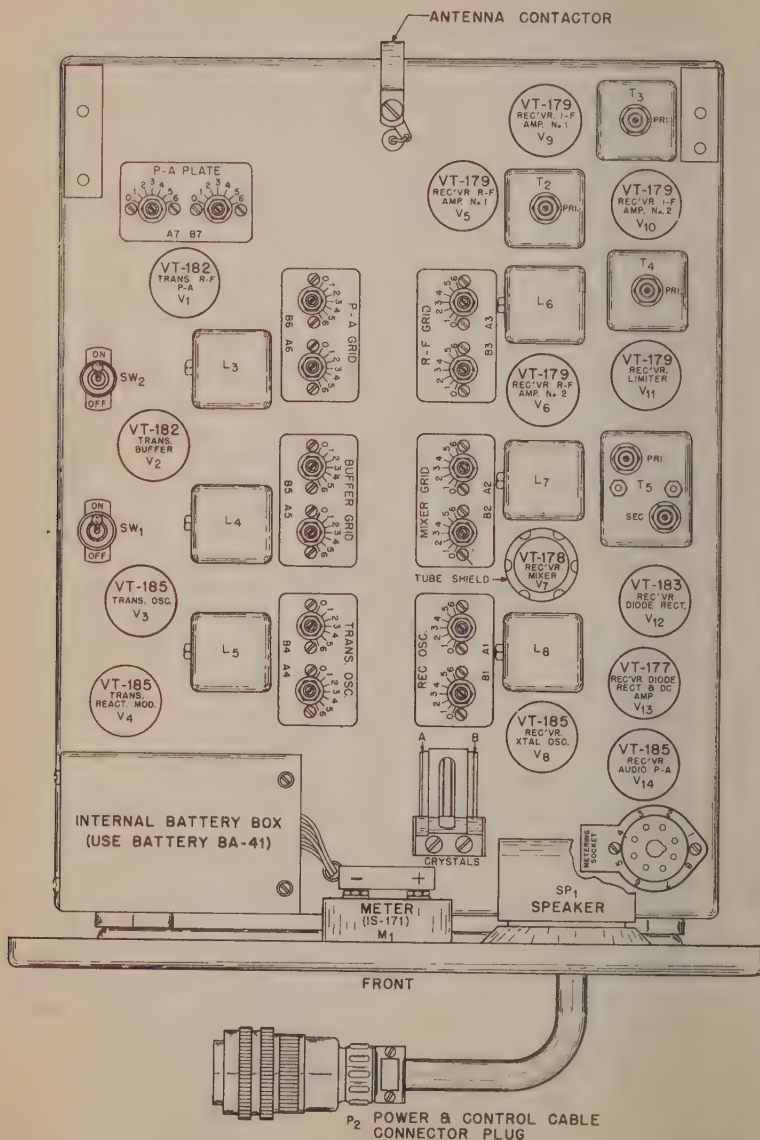


Figure 4. Radio Receiver and Transmitter BC-659-(*),—Top View of Chassis

The *radio set* is shipped with all tubes in place, crystals for Channels 272 and 281, but without batteries.

a. Radio Receiver and Transmitter BC-659-().*

The chassis of Radio Receiver and Transmitter BC-659-A & BC-659-B is held in the housing by screws. To remove chassis from housing, remove the ten screws on the outer edge of the front panel. Pull forward on the front panel, which is attached to the chassis, removing chassis from housing. Remove the cover of the battery box, located on chassis near front panel. (Fig. 4.)

Radio Receiver and Transmitter BC-659-H is held to the housing by two catch clips. To remove from chassis loosen the clips and pull forward on the front panel.

Place Battery BA-41 in the box, being careful to engage the plug into socket of the battery. Replace the cover. Be sure the proper crystals are in place and that the crystal retaining clip is in position to hold them securely. Check to see that all tubes are seated firmly in their sockets. *CAUTION: Do not interchange crystals; doing so requires realignment of the equipment for netted communication.* Make sure that the two toggle switches (SW₁ and SW₂) located near the left edge of the chassis are turned to ON. Slide the chassis back into position, making sure that the gasket is properly seated. Replace the ten screws; or fasten the two catch clips.

b. Portable.

Open Battery Case CS-79-(*) and install Batteries BA-39 and BA-40. (Fig. 5). Tighten the webbed straps to hold the batteries securely. Place one telephone Handset TS-13-(&), and Alignment Tool TL-150 or TL-207 in position. (Fig. 5.) Also put in the coil of Wire W-126 or W-128. Close the case and fasten the catch clips. The unit is now ready for service.

c. Vehicular.

(1) Open Plate Supply Unit PE-117-C, unscrew the six knurled nuts and remove the power pack cover. Figure 6 shows an interior view of the case. Check to make sure that Vibrator VB-7-(*), Tubes VT-184 and VT-195, Capacitor CA-403-(*), and Fuse FU-33 are properly installed in their respective receptacles. Also check to make sure that spare Vibrator VB-7-(*), Capacitor CA-403-(*), and Fuse FU-38 are also in their respective clips.

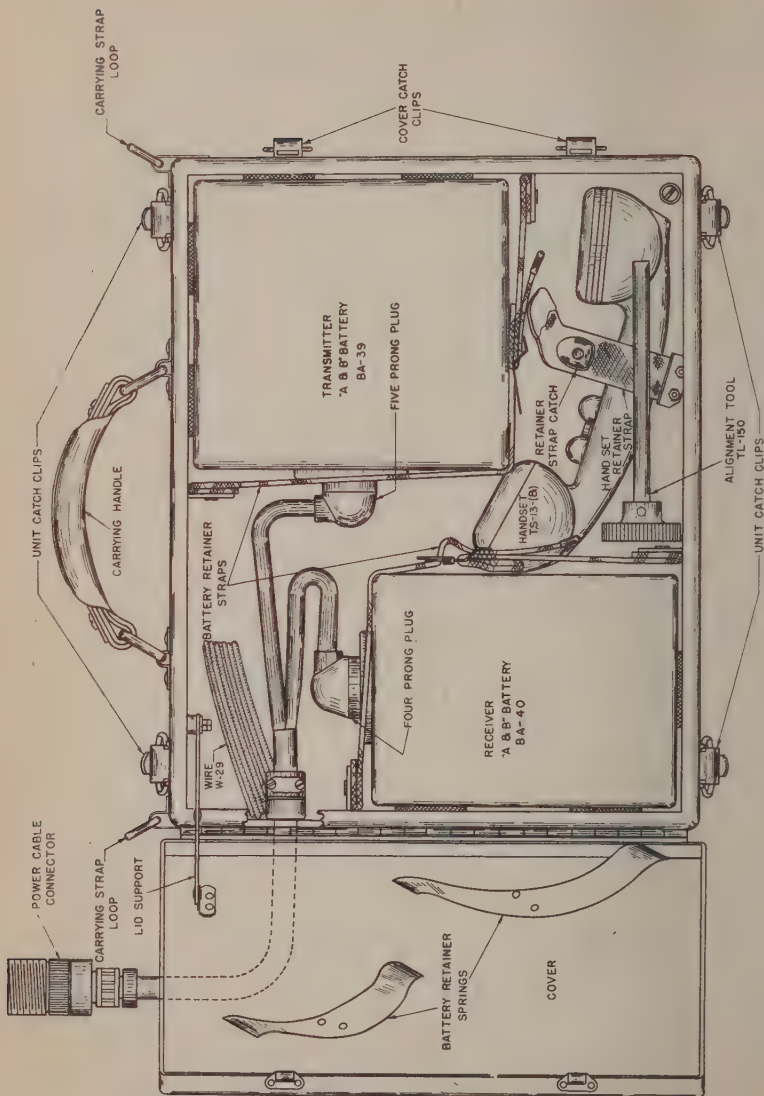


Figure 5. Case CS-79-(*),—Layout

IMPORTANT

MAKE SURE THAT THE VOLTAGE CHANGEOVER LINKS ARE SET FOR THE VOLTAGE OF THE VEHICULAR BATTERY. If a 12-volt vehicular battery is used with a power unit with links set for 6-volts, damage is sure to result. The correct position is shown on the label on the power pack cover. Place Handset TS-13-(&) in one of the storage compartments of Plate Supply Unit PE-117-C.

(2) Install Mounting FT-250-(*) so that an antenna lead-in 3 feet (± 1 inch) long may be used. In selecting this location, allow sufficient space to mount Radio Receiver and Transmitter BC-659-(*) on top of Plate Supply Unit PE-117-C. (Fig. 2). If this cannot be done, Cord CD-509, supplied for the purpose, can be used to connect the power unit to the radio receiver and transmitter. When Plate Supply Unit PE-117-C is mounted separately from the receiver-transmitter unit, use Mounting FT-317-(*). Installation of Mounting FT-317-(*) will depend on the vehicle, therefore no specific instructions are given here.

(3) The radio receiver and transmitter should be mounted horizontally when the set is installed in $\frac{1}{4}$ -ton 4x4 truck. It may be mounted either horizontally or vertically in larger vehicles. If mounted vertically, only Radio Receiver and Transmitter BC-659-(*) can be installed in Mounting FT-250-(*). That is, Case CS-79-(*) or Plate Supply Unit PE-117-C should not be carried with the receiver and transmitter vertical. Select positions for the mast base, as well as for the shock mounting, before either of the two units is mounted in position. After the shock mounting is fastened down, place Plate Supply Unit PE-117-C, and Radio Receiver and Transmitter BC-659-(*) in position and fasten the catch clips. Connect the power cable plug of the radio receiver and transmitter to the corresponding receptacle of Plate Supply Unit PE-117-C, making sure they are matched properly and screwed together securely. Connect the "A" battery leads to the vehicular storage battery. The terminals on the ends of this cable are marked (+) and (-). Be sure that the (+) terminal is connected to the positive side of the battery and the (-) terminal to the negative side of the battery.

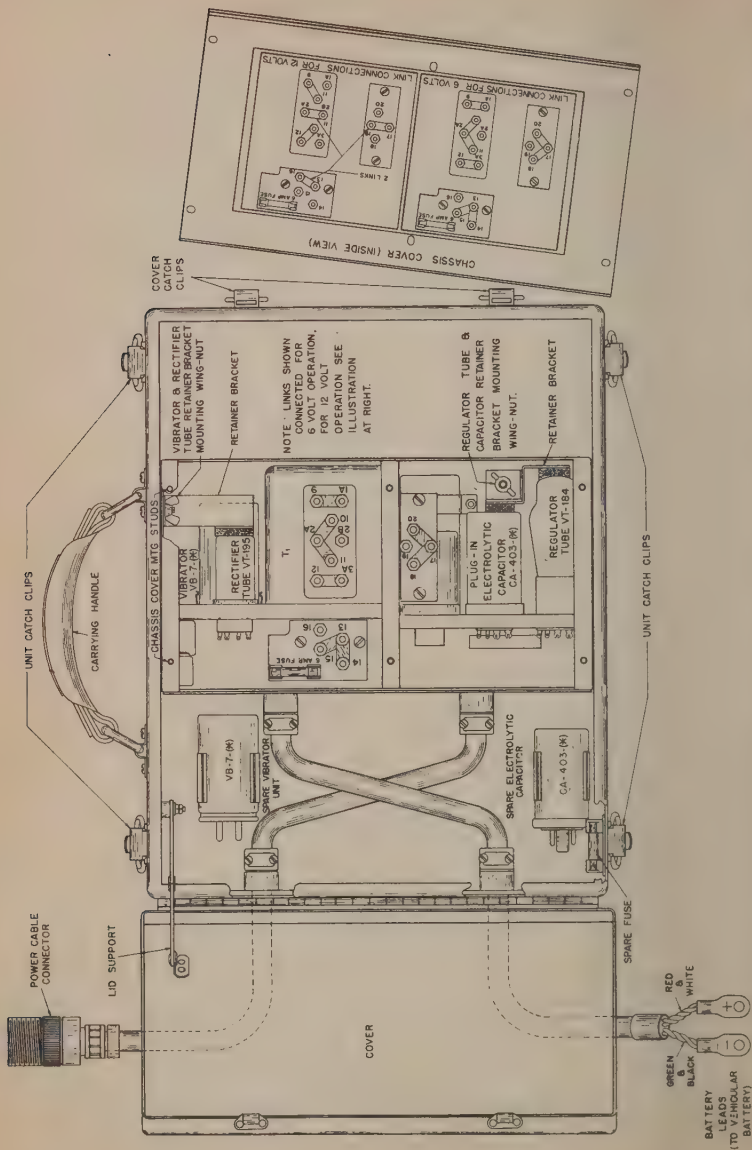


Figure 6. Plate Supply Unit PE-117-C,—Layout

Route the cable so that it is out of the way and protected as much as possible. If it is necessary to pass cable through a wall, use the connector and bondnut. (Fig. 7).

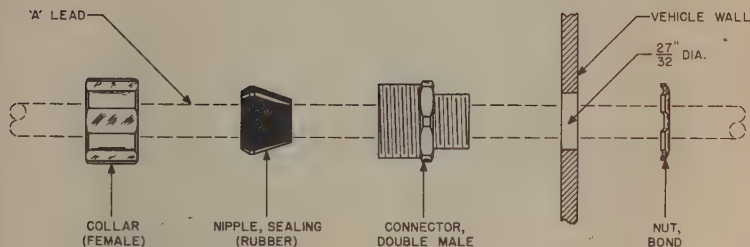


Figure 7. Connector and Bond Nut, —Installation Detail

(4) Unpack the mast bracket* and mount it on the outside of the vehicle, using suitable bolts or screws. Mount it in the position that is best suited to the limitations of the vehicle and to the mounting space requirements for the radio set. As indicated in paragraph 5c(2), it is better to place it close enough to Mounting FT-250-(*) so that the length of the antenna connecting lead can be 3 foot (± 1 inch).

(5) Assemble Mast Base MP-48-(*) to Mast Base Bracket *MP-50 or *MP-54. Connect the antenna terminal of the receiver and transmitter to the top terminal of the mast base. Use Wire W-126 or W-128 3 feet (± 1 inch) long, routing it through the guides of the mast base. (Fig. 8). Be sure to remove the inner connector of Mast Base MP-48-(*) when using a wire lead-in, otherwise the range of the set will be reduced about 50 percent. Place mast base Cover BG-108 over the complete assembly.

*Mast Bracket MP-50 or MP-54 is used, depending on vehicle and installation.

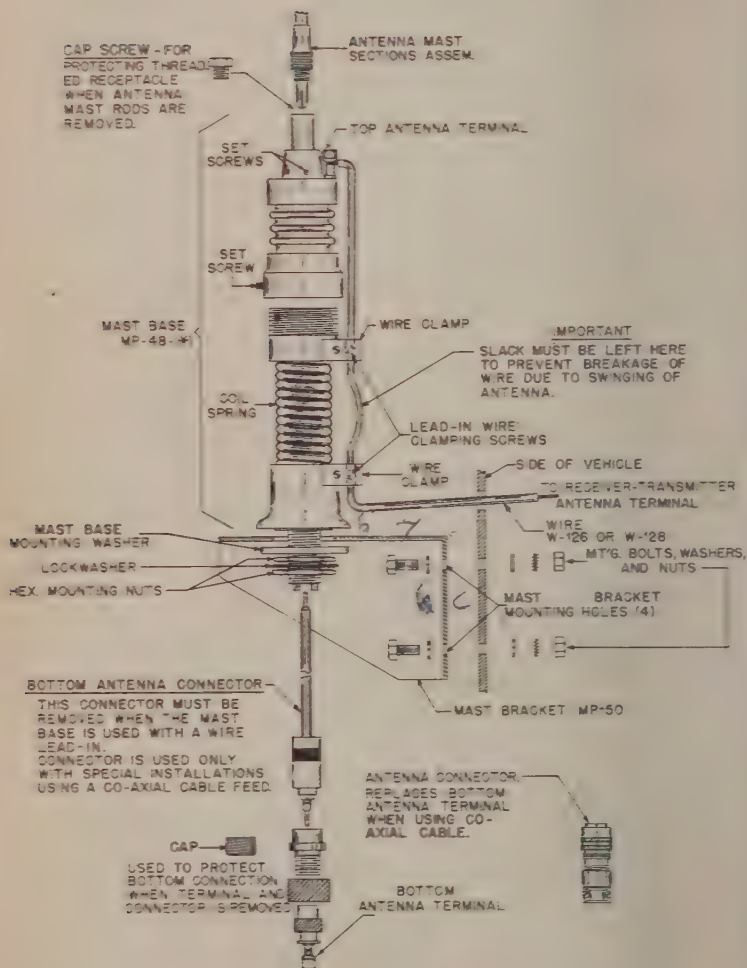


Figure 8. Vehicular Antenna Assembly

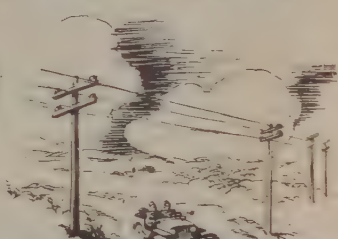
6. Preparation for Use.

In preparing to operate the radio set, be careful to select a suitable site for communication. Objects close to the antenna will absorb some of the radiated energy and reduce the range of communication. Any objects touching the antenna will seriously impair performance.

THESE PLACES ARE BAD FOR RADIO



VALLEYS



HIGH TENSION LINES



OVERHEAD STEEL BRIDGES



UNDERPASSES

But THESE ARE GOOD



GOOD



BETTER



BEST

ON LEVEL GROUND

SLIGHT RISE

BIG HILL

a. Make sure the antenna connections are clean and tight. Where insulated wire is used, strip off the insulation to assure good electrical contact to the antenna post or terminal. When using the collapsible antenna be sure it is extended fully.

b. In joining the power cable connectors, see that the key and keyway are together. Do not force the connectors together in any other position. Screw the ring clamp down securely to prevent disconnection during operation. See that the plugs make firm and positive connection to the batteries.

c. For vehicular operation, be sure the "A" battery cable connections to the vehicular battery are of correct polarity, and that the changeover links in the plate supply unit are all in the proper positions for the voltage of the vehicular battery in use.

d. Be sure that all batteries are of sufficient voltage to operate the radio set. (Par. 2).

e. Keep the handset plug, jack contacts, and the battery plug prongs, clean. Dirt or corrosion on these contacts may cause erratic operation.

7. Operation.

a. Portable.

(1) Place Battery Case CS-79-(*) on the ground or other support. Open the case and remove Handset TS-13-(&). See that the battery plugs are properly inserted into the batteries. Close the case cover and latch it. Place the receiver and transmitter on Battery Case CS-79-(*) and fasten the two units together with catch clips. Join the cable connectors of the two units, placing the key in the keyway, and screw the fittings together securely. Extend Antenna AN-29-C to its full length and screw it to the antenna terminal on the rear of the radio receiver and transmitter case, first tightening down the knurled nut securely. (Fig. 3A). Insert Handset TS-13-(&) plugs into the MIC and PHONES jacks on the radio receiver and transmitter panel. *The alignment of the P. A. plate on bands A and B should be checked before actual use in the field.* (Par. 28 or 29).

(2) Turn the switch and volume control knob full ON (to the right). Turn the meter switch to OPER. Turn the channel selector knob to the channel on which communication is to be made. Listen for the station with which communication is desired. Regulate volume to the desired level. To transmit, press the switch on the

handset and speak clearly into the microphone. Release the switch when transmission is completed. To turn the radio set off, turn volume control knob to OFF, (to the left). *NOTE: The VOL knob controls only the receiver volume and has no effect on the output power of the transmitter.*

b. Vehicular.

(1) Remove Handset TS-13-(&) from Plate Supply Unit PE-117-C.

(2) Place the radio receiver and transmitter on the plate supply unit and fasten them with the catch clips to each other and to the mounting.

(3) Join the power and control cable connectors and screw them together securely.

(4) Check to see that the antenna wire lead-in is properly connected.

(5) Plug Handset TS-13-(&) into the MIC and PHONES jacks on the front panel.

(6) Remove Mast Sections MS-51, MS-52 and MS-53 from Roll BG-56-(*) and assemble. Screw them together tightly, using a pair of gas pliers.

(7) Wind several turns of friction tape, in a counter-clockwise direction, starting at the lower half of the joint and winding upward, tightly around junction of mast sections, to prevent unscrewing of mast sections under severe vibrating conditions. Use Clamps MC-423 and MC-424, if you have them, instead of tape.

(8) Remove Cover BG-108 and the protecting cap screw from the mast base, and screw in the assembled mast sections.

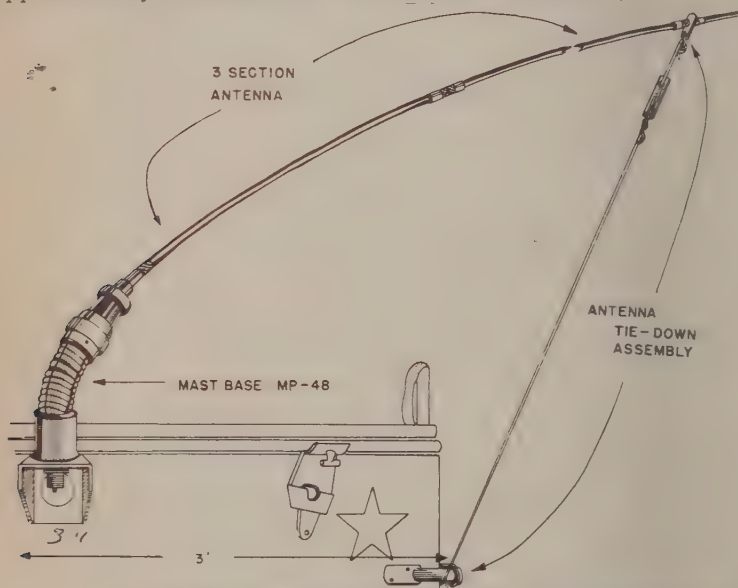
(9) The radio set is ready to operate, after alignment of P. A. plate stage on Bands A and B (Par. 28 or 29), and the rest of the procedure is as described in par. 7a (2).

(10) *Tying Down the Antenna.*

To attract as little attention as possible to your vehicle, it may be necessary to tie down the antenna. A metal fitting, a ceramic (porcelain) insulator, such as Insulator IN-86 or IN-87 and at least 15 feet of Rope RP-5 are issued for use as the tie-down assembly. Proceed as follows:

(a) Cut $11\frac{1}{2}$ feet of rope from the 15-foot length. Tie one end securely through the $\frac{3}{8}$ -inch hole of the metal fitting and the other through one hole of the porcelain insulator. Attach the remaining rope through the other hole of the insulator and tie it securely.

(b) Slip the lower end (the threaded portion of the plug end) of section (MS-52) through the $\frac{1}{2}$ -inch hole of the metal fitting and screw the mast section back into the top of the lower mast section (MS-53). Pull the antenna down, by means of the rope, until it is nearly horizontal, or no higher than the top of the vehicle. Fasten the rope with a secure knot to convenient point on the vehicle, approximately three feet from the mast base bracket.



CAUTION: Remember that the frequencies used for FM transmission act very much like light. A good rule to remember is that FM signals cannot be relied upon to travel any farther than the distance you can see on a clear day *from the spot where you are operating*. This distance on flat terrain is usually to the horizon. Therefore select a site on top of a rise in ground. The higher the better. *Your signals will be louder and you'll send further when your antenna is vertical. So keep it that way, unless you want to reduce visibility of your vehicle. When your antenna is tied down horizontally, remember you won't be able to send as far, so keep this in mind and don't expect your normal range. Plan accordingly.*

c. Remote Control for Portable or Vehicular Operation.

For remote control of the radio receiver and transmitter, use Remote Control Unit RM-29-(*). This unit in conjunction with a field telephone unit provides control of communication from points at a distance from the radio set. (Fig. 9).

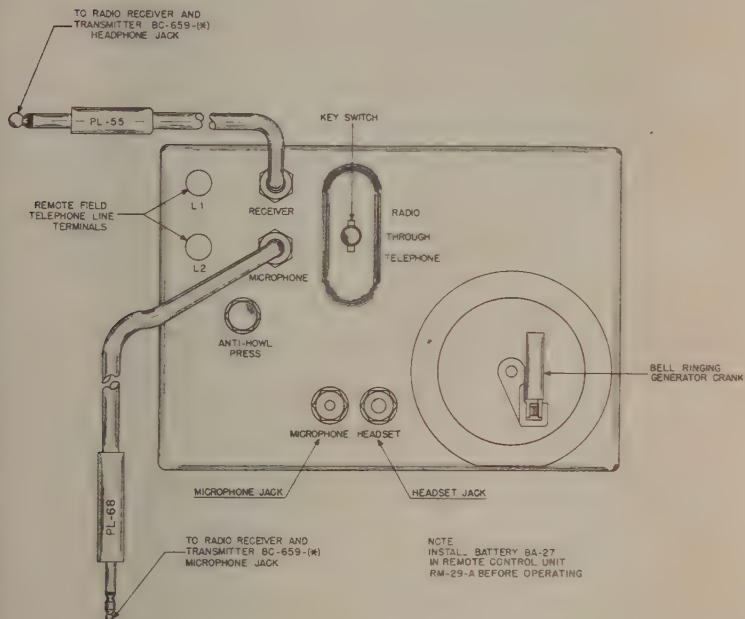


Figure 9. Remote Control Unit RM-29-(*)

(1) Plug the headset and the microphone into the jacks on the remote control unit panel. Plug the remote control unit receiver and microphone cables into the PHONE and MIC jacks on the panel of Radio Receiver and Transmitter BC-659-(*). Connect the wires from the field telephone to the two binding posts labeled L₁ and L₂ on the panel of Remote Control Unit RM-29-(*). The unit is now ready to operate.

(2) When communication by telephone is not desired, set the key switch at RADIO and the operation is normal for the radio receiver and transmitter. Proceed as instructed for operating Radio Sets SCR-609-A and SCR-610-A.

(3) To transmit a signal from a remote field telephone, operate the key switch to THROUGH and press the ANTI-HOWL PRESS switch. Any signal carried to Remote Control Unit RM-29-(*) by the lines attached to binding posts L₁ and L₂ is fed to the transmitter of the radio set.

8. Operating Precautions.

a. Always turn the VOLUME control ON far enough to the right to assure hearing the other station; turn it all the way ON and when that station is heard, reduce the volume to the desired level. When communication is completed, turn the VOLUME knob to the left to OFF; a click will be heard when the switch is thrown. Do not leave the switch ON when the receiver is not in use. This causes unnecessary drain on the batteries.

b. Make sure the CHAN switch is turned to the correct channel, and is not set between stops.

c. With the meter switch at OPER, and the push-to-talk switch pressed, read the panel meter. This should read from 1.5 to 2.5 if the transmitter is functioning properly. If the reading is more than 2.5 or less than 1.5, investigate for trouble.

d. *Check the condition of the Batteries Occasionally as Follows:*

(1) *Dry Battery Operation.* Turn the meter control switch to PLATE, press the handset push-to-talk switch, and read the panel meter. A reading of less than 2 indicates a weak Battery BA-39. Turn the switch to FIL, and read the meter. Less than 2 shows a weak Battery BA-40. If voltages are low, install fresh Batteries BA-39 and BA-40, in Battery Case CS-79-(*). The drain on internal Battery BA-41 is very low and its life approximates normal shelf life. Replace it about every 8 months. If the set is not being used for 24 hours or more, remove the plugs from Batteries BA-39 and BA-40. If the set is to be shipped or stored for 30 days or more, remove all dry batteries including internal Battery BA-41.

(2) *Vehicular Battery Operation.* Turn the meter control switch to PLATE, press the push-to-talk switch, and read the panel meter. If it reads less than 2 (the luminous spot), it indicates a weak storage battery, or trouble in Plate Supply Unit PE-117-C. Zero plate voltage may mean either a defective fuse, electrolytic Capacitor CA-403-(*), or Vibrator VB-7-(*). A spare of each of these is carried in the case of Plate Supply Unit PE-117-C. To replace any of these, refer to figure 6. Remove the cover of the vibrator pack to replace any of the above three parts. Replace the spare parts removed from the unit with new spares at the first opportunity. Turn the switch to FIL and read the meter. It should not be less than 2 (the luminous spot). A lower reading indicates low storage battery voltage, or failure of the vehicular battery.

DON'T:

Carry your radio set by its battery cable. This will break connections and render your set useless.

Drop or sit on your radio. It's tough, but not that tough. Treat it with care.

Leave it out in the rain unnecessarily. Use canvas or something handy to cover it. Rain and dampness are bound to seep in and destroy its efficiency.

Expect to work more than your set's range. Three miles over most terrain is a safe margin.

SECTION III—FUNCTIONING OF PARTS

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9. Receiver.

The receiver is a superheterodyne type with a crystal controlled oscillator, and designed for reception of frequency modulated signals. In addition to its normal function, the receiver provides automatic frequency control of the transmitter.

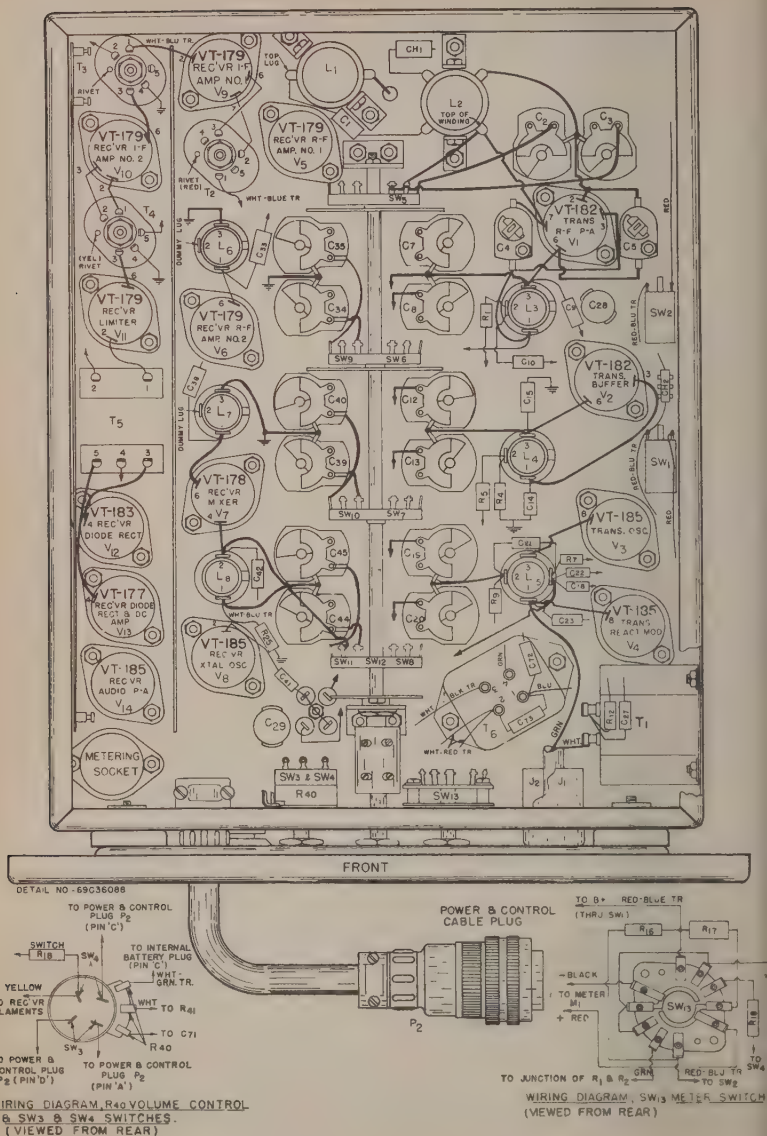


Figure 10. Radio Receiver and Transmitter BC-659(*),—Bottom View of Chassis

The tube complement of the receiver is as follows: Two r-f amplifier stages using 2 Tubes VT-179, a Pierce crystal oscillator, using Tube VT-185, a mixer stage with Tube VT-178, a two-stage i-f amplifier using two Tubes VT-179; a limiter stage with Tube VT-179; a discriminator circuit using a diode Tube VT-183; a diode rectifier and d-c amplifier circuit using the diode and triode elements, respectively, of Tube VT-177, and an audio amplifier stage using Tube VT-185. (Fig. 25).

Two additional tubes are contained in Plate Supply Unit PE-117-C; a voltage regulator Tube VT-184, and a rectifier Tube VT-195.

When receiving, the signal is first picked up by the antenna and transferred to the control grid of the No. 1 r-f amplifier Tube VT-179 (V_5), from the power amplifier plate tank circuit through coupling Capacitor C_{30} . The signal on the control grid of No. 1 r-f amplifier Tube VT-179 (V_5) is amplified and impressed on the control grid of the No. 2 r-f amplifier Tube VT-179 (V_6). It is further amplified and impressed on the control grid of the mixer Tube VT-178 (V_7). The fourth harmonic of the crystal oscillator Tube VT-185 (V_8) is fed to the injection grid of the mixer Tube VT-178 (V_7). The set is so designed that the frequency of the oscillator voltage injected into the mixer tube is always below the signal frequency of the receiver. It is the fourth harmonic of the crystal fundamental. This crystal frequency can be calculated by subtracting the intermediate frequency from the signal frequency, and dividing the result by four.

The oscillator Tube VT-185 (V_8) and associated circuit components are shown in figure 25.

The output of the mixer Tube VT-178 (V_7) is an intermediate frequency equal to the signal frequency minus the fourth harmonic of the oscillator.

This i-f signal is amplified by a two stage amplifier composed of the i-f amplifier Tubes VT-179 (V_9) and VT-179 (V_{10}) and the i-f transformers T_2 , T_3 and T_4 .

This amplified signal is impressed on the control grid of the limiter Tube VT-179 (V_{11}). The circuit is connected so that the D.C. grid voltage developed by a signal through this tube can be measured at pin No. 3 of the metering socket SO_2 . The function of the limiter tube is to eliminate variations in the amplitude of the incoming

signal. The output of the limiter tube at a practically constant level and with noise peaks clipped off, is fed into the discriminator circuit. This includes the discriminator transformer T_5 , the diode Tube VT-183 (V_{12}), and the diode elements of Tube VT-177 (V_{13}) and associated resistor network.

The diode rectifiers and the transformer T_5 are arranged in push-pull, and the output depends on the frequency of the i-f signal. If this signal is at 4300 kc, which is the nominal i-f of the receiver, the output voltages of the two diodes cancel and no voltage appears between the cathode of Tube VT-183 (V_{12}) and ground. Should the frequency change, however, a voltage will appear between the cathode and ground of Tube VT-183 (V_{12}), being positive when the frequency (within the limits of the circuit) of the signal is lower, and negative when the frequency is higher. This voltage can be measured at pin No. 7 of the metering socket.

When a frequency modulated signal is received, the voltage output of the diodes will vary as the frequency varies on both sides of nominal, and an audio signal is produced.

This signal is amplified by the audio output Tube VT-185 (V_{14}) and is coupled through the output transformer T_6 to the headphone speaker Jack J_2 . Phones may be plugged into this jack, or the internal speaker may be used. The speaker is disconnected when the headphones are plugged in.

The diode rectifier voltage (discriminator voltage) is also impressed on the grid of the d-c amplifier tube, which is the triode section of Tube VT-177 (V_{13}). The amplified voltage output of this tube is fed to the transmitter reactance modulator-grid as is explained under "Transmitter" paragraph 10.

10. Transmitter.

The transmitter consists of a reactance modulator, oscillator, buffer-doubler stage and final amplifier stage. The transmitter section of Radio Receiver and Transmitter BC-659-(*) is shown in figure 26.

The tube complement of the transmitter is as follows: A modulator, Tube VT-185 (V_4); oscillator, Tube VT-185 (V_3); transmitter buffer-doubler, Tube VT-183 (V_2); and power amplifier, Tube VT-182 (V_1).

The oscillator is designed for high frequency stability over a wide temperature range. Its frequency is determined by its tank inductance and capacity, L_5 and C_{19} or C_{20} , and by the reactance modulator, Tube VT-185 (V_4). (Fig. 26).

The effect that this reactance modulator tube has on the oscillator frequency is such that an increase or decrease in the grid bias of the modulator tube, which is the sum of the voltage output of the receiver d-c amplifier and the audio voltage from the secondary of the microphone transformer T_1 causes an effective change in the capacity of the oscillator tank circuit and thus a change in the transmitter frequency. An increase in bias causes a resultant higher transmitter frequency and a decrease in bias produces a lower frequency.

A portion of the transmitter signal is fed into the receiver and since the receiver is crystal controlled, the transmitter frequency is made to follow any frequency change that appears at the receiver input, as long as the transmitter frequency remains within the range of control of the discriminator and d-c amplifier. Therefore, a bias produced by the d-c amplifier tends to hold the transmitter frequency constant, and the bias voltage from the microphone through T_1 modulates the oscillator frequency of the transmitter at the voice frequency.

The oscillator uses an electron-coupled circuit. Its frequency is determined by the coil L_5 , capacitor C_{21} , capacitor C_{19} (or C_{20}) and the reactance modulator V_4 . Its plate circuit has high harmonic content. By coupling its plate output through capacitor C_{16} to the tuned circuit, coil L_4 , capacitors C_{14} , C_{15} and C_{12} (or C_{13}), which is tuned to the second harmonic of the oscillator frequency, enough voltage will be developed across the coil L_4 to excite the grids of buffer-doubler tube V_2 (VT-182). It should be noted that this tube (V_2) is connected in push-push (grids in push-pull, plates in parallel), thus enabling it to function as a high efficiency doubler. The output of this tube is coupled through capacitor C_9 to the tuned circuit coil L_3 and capacitor C_7 (or C_8). This circuit is tuned to twice the buffer-doubler input frequency (four times the oscillator frequency). The voltage developed across coil L_3 excites the grids of the power amplifier V_1 (VT-182) which is connected in the conventional neutralized push-pull circuit. The tuned circuit coil L_2 and capacitor C_2 (or C_3) is tuned to the same frequency as coil L_3 and capacitor C_7 (or C_8) (four times oscillator frequency) and provides the plate circuit for the final amplifier from which the antenna excitation is taken.

The power amplifier output is coupled to the antenna through the loading coil L_1 .

11. Plate Supply Unit PE-117-C.

Plate Supply Unit PE-117-C is used to supply Radio Receiver and Transmitter BC-659-(*) with the correct operating voltages from a 6 or 12 volt vehicular storage battery. The schematic wiring diagram of Plate Supply Unit PE-117-(*) is shown in figure 23.

The vehicular battery leads are about ten feet long and are shown at the lower left hand corner of the schematic diagram, figure 23. The positive lead to the plate power vibrator transformer T_1 is carried through SW_3 in Radio Receiver and Transmitter BC-659-(*) and Fuse F-1 in Plate Supply Unit PE-117-C. The positive and negative leads to the vibrator transformer are filtered by chokes CH_1 , CH_2 , and mica capacitors C_2 , C_3 , C_4 and C_5 to prevent "hash" from the vibrator plate rectifier units getting back into the vehicular battery leads.

Vibrator VB-7-(*) alternately applies the vehicular battery voltage to one side and then the other of the primary of the vibrator transformer T_1 . The alternating current voltage in the secondary of the vibrator transformer T_1 is applied to the rectifier, Tube VT-195. The secondary winding (terminals 7-8) applies alternating current voltage to the filament (prongs 6-8) of the rectifier, Tube VT-195. The high voltage from the secondary (terminals 4-6) of the transformer T_1 is applied to the rectifier plates (prongs 3 and 5). Buffer capacitor C_{11} reduces radio frequency voltages generated in the rectifier tube and at the same time tunes the secondary of the transformer T_1 to the correct operating frequency. The frequency at which Vibrator VB-7-(*) applies potential to the primary windings of T_1 is determined by the mechanical resonance of the reed in the vibrator unit. The vibrator is actuated by a coil which has its own independent contact on the vibrating reed. (Fig. 23).

The direct current output of the rectifier, Tube VT-195 is applied through an r-f choke CH_4 to the "B" filter choke CH_5 . The electrolytic filter capacitor C_{10} contains two electrolytic capacitor units which are connected to both sides of the "B" filter choke CH_5 . The filtered d-c high voltage output from Plate Supply Unit PE-117-C appears at terminal No. 2 of choke CH_5 and is carried by the red wire to pin E of the power and control cable receptacle P_1 .

The receiver "B" voltage regulator, Tube VT-184, is contained in Plate Supply Unit PE-117-C. The regulated d-c voltage appears at pin 5 of this tube. It is regulated to approximately 90 volts and is carried to terminal B of Plate Supply Unit PE-117-C power and control cable receptacle P₁ by the white wire.

The receiver filament supply for Radio Receiver and Transmitter BC-659-(*) is obtained from Plate Supply Unit PE-117-C through the green wire which connects to terminal C of the power and control cable receptacle P₁. The hash and hum voltages that may occur across the vehicular battery terminals are filtered through filter choke CH₃. "Hash" capacitors are shown as C₆, C₇, across choke CH₃. The hum filter capacitor is C₉. This is an electrolytic capacitor of approximately 1000 μ f. The positions of the changeover links across R₅ and R₆ are adjusted to provide correct receiver and transmitter filament voltages with either 6 or 12 volt input. The links short out resistors R₅ and R₆ in the 6 volt position only.

The changeover links for changing the power transformer connections appear across the terminal posts indicated at the primary windings of vibrator transformer T₁ and across resistor R₄. The positions indicated in the schematic diagram are for 6 volt vehicular battery operation. These links are shifted for 12 volt operation as indicated by the insert diagrams on figure 6, and also on the label underneath the chassis cover inside of Plate Supply Unit PE-117-C.

12. Case CS-79-(*).

Case CS-79-(*) is shown in figure 5. This unit houses Batteries BA-39 and BA-40. Space is also provided for Handset TS-13-(&), and Alignment Tool TL-150 within the case. A molded connector cable passes through the battery case. This has the battery plugs on the inside and the cable connector at the outside end to convey the battery voltages from Case CS-79-(*) to Radio Receiver and Transmitter BC-659-(*). The wiring diagram of this cable and battery connector is shown in figure 12.

Web belting fastened to brackets in Case CS-79-(*) and two large springs fastened to the top lid serve to hold the batteries in their correct position within the case.

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13. Inspection.

a. If Radio Receiver and Transmitter BC-659-(*) fails to operate, inspect for possible causes of failure.

(1) Make certain the meter control switch is at OPER and that the CHAN switch is definitely set at one channel or the other.

(2) Make sure the microphone and phone plugs are properly inserted into their receptacles.

(3) Check the antenna terminal to make sure the telescopic antenna is installed properly, or that the antenna lead is firmly connected to the antenna.

(4) Check to see that the antenna connector is connected to the mast terminal, (if a mast antenna is being used) and that the antenna is not being *grounded* or detuned by some other object coming in contact with it.

(5) Turn the meter control switch to PLATE and note the panel meter, which should read about 2 or more. If there is no reading, it indicates lack of "B" voltage.

(6) Turn the control to FIL and note the reading. This should also be 2 or more. If there is no meter reading the filaments of the tubes in Radio Receiver and Transmitter BC-659-(*) are receiving no voltage.

(7) Check the connector plug and receptacle which join Radio Receiver and Transmitter BC-659-(*) to Plate Supply Unit PE-117-C or to Case CS-79-(*). Be sure both sections of the connector are pushed together securely to assure a good contact, and that they are tightly threaded.

b. Dry Battery Operation.

Check the condition of the batteries occasionally, as follows: Turn the meter control switch to PLATE, press the push-to-talk switch and read the panel meter. If it reads less than 2 (the luminous spot) it indicates a weak Battery BA-39. Turn the selector switch to FIL and read the meter. It should be not less than 2. If lower voltages are indicated, a fresh Battery BA-40 should be installed in Case CS-79-(*).

c. Vehicular Battery Operation.

(1) Open Plate Supply Unit PE-117-C, and check to make sure that Fuse F₁ is intact, that Vibrator VB-7-(*), rectifier Tube VT-195, voltage regulator Tube VT-184, and plug-in electrolytic Capacitor CA-403-(*), are seated properly in their respective sockets, and making good contact.

(2) Check the position of the link connectors on the power pack by comparing them to the drawing cemented to the inside of the plate supply unit cover, to make certain that they are in the proper position for the voltage of the vehicular battery.

(3) Turn the meter control switch to PLATE, press the push-to-talk switch and read the panel meter. If it reads less than 2 (the luminous spot) it indicates a weak vehicular battery, or trouble in Plate Supply Unit PE-117-C. Zero plate voltage possibly indicates a defective fuse, defective Capacitor CA-403-(*), or defective Vibrator VB-7-(*).

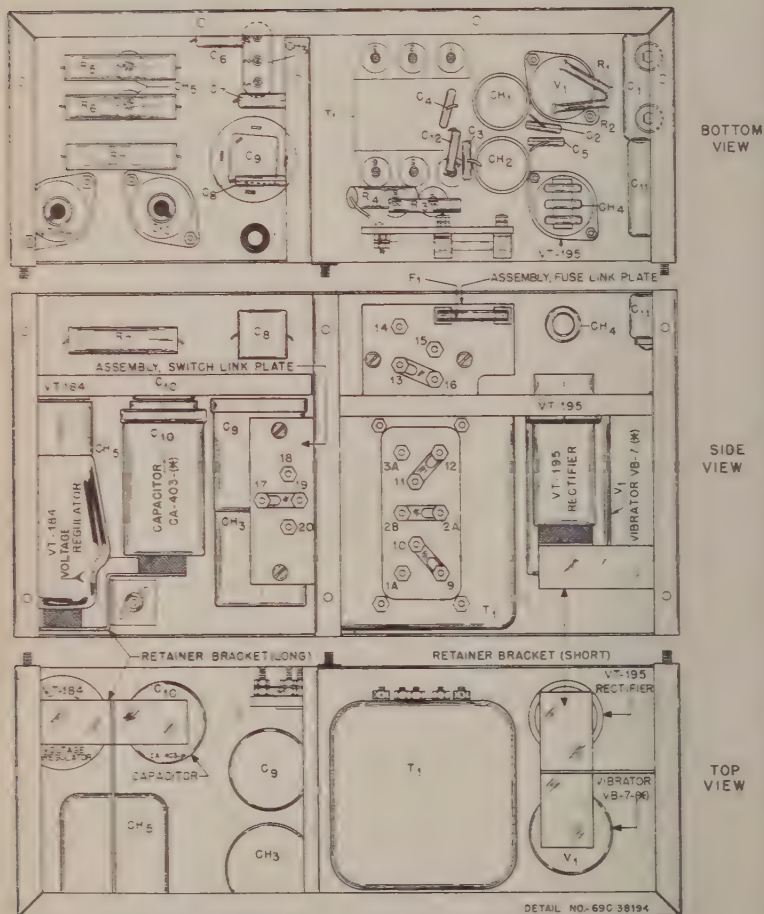


Figure 11. Plate Supply Unit PE-117-C. - Parts Location Detail

(4) Located in Plate Supply Unit PE-117-C on the power pack chassis, are five items that may need replacement from time to time. These are Fuse F₁ (6 ampere), Vibrator VB-7-(*), rectifier Tube VT-195, voltage regulator Tube VT-184 and electrolytic Capacitor CA-403-(*). These can be identified in figure 11. All of these items plug into suitable sockets or receptacles on the power pack, and in all cases, socket arrangements are such that no error can be made when inserting the replacement. Spares for all items except the rectifier Tube VT-195, and voltage regulator Tube VT-184, are carried in suitable clips right inside Plate Supply Unit PE-117-C. Two spare rectifier Tubes VT-195, and voltage regulator Tubes VT-184, are supplied in the replacement tube kit. When defective, any of these components may be removed by pulling them from their sockets. The replacement should be inserted so that the pins line up properly with the socket holes, and it should be pushed down firmly to assure good contact.

NOTE: Vibrators VB-1-() and VB-7-(*) are interchangeable.*

14. Battery Replacement.

a. When the receiver and transmitter batteries run down, as indicated by a reading of less than 2 on the panel meter, with the meter control switch either at PLATE or FIL:

(1) Replace the old batteries with fresh ones. Placing them in position as shown in figure 5.

(2) Tighten the webbed straps securely.

(3) Insert the two battery plugs into the receptacles on the batteries, pushing firmly to make certain they make good connections.

b. There is an internal Battery BA-41, located in a small battery box that is mounted near the front pane inside Radio Receiver and Transmitter BC-659-(*) case. Negligible current is drawn from this battery and its life in the radio set is consequently the normal shelf life.

(1) Replace it with a fresh battery after about 8 months of use.

(2) In making replacement, insert the plug firmly into the battery socket to assure good contact, and replace the battery box cover.

15. Cables and Connectors.

Defective cables or connectors, such as open and short circuits, will stop operation of the radio set. These defects can be located with the voltohmmeter and the wiring diagram. (Fig. 12). If the fault is in the connector, it can generally be corrected by disassembling the connector and resoldering, wrapping tape around the wires to keep them separated. If the cable is defective, it is advisable to replace the cable.

To make any of the replacements or tests in the following paragraphs of this section, it will be necessary to remove Radio Receiver and Transmitter BC-659-() from the case. (Par. 5a).*

16. Tube Replacement.

a. Locate the defective tube. To do this replace each tube (one at a time) with tubes known to be good. Do not change any but defective tubes. When replacing tubes, be sure that the proper type of tube is used.

(1) First read the type number on the tube being removed from the socket and compare the new tube with the type number indicated for that socket. (Fig. 4).

(2) To remove the old tube carefully rock or tilt it slightly (about $\frac{1}{8}$ inch) in the direction of the screw heads located in the chassis base at the bottom of the tube, and at the same time pull it firmly upward out of the socket. *Do this carefully or it may cause permanent damage to the socket contacts.*

(3) Insert the new tube so that the key in the tube-base lines up with the keyway in the tube socket and push firmly down until it locks in the socket.

(4) If the transmitter oscillator or transmitter reactance modulator-tubes are changed, check and if necessary realign the transmitter oscillator-tuning-capacitor, A2 B2 on both channels, as directed in paragraph 28 or 29.

17. Desiccator.

Although Radio Receiver and Transmitter BC-659-(*) is sealed against moisture, a silica jell desiccator, enclosed in a spun glass bag, is used as an extra precaution to absorb any moisture which may collect in the radio. A portion of this bag is coated with cobalt chlo-

ride to serve as an indicator of the moisture content of the silica jell. The cobalt chloride indicator is visible through the perforations in the metal desiccator cover plate, when the radio receiver and transmitter chassis is removed from its case. A *blue* color indicates a *dry* desiccator; a *pink* color indicates a *moisture* saturated desiccator requiring regeneration.

To regenerate (dry) the desiccator, first remove it from the case; heat the desiccator bag in a circulating oven (about 300°F) for 1 hour. A temperature higher than 300°F. may be injurious to the silica jell. If a non-circulating type oven is used, a longer regeneration (drying) period will be necessary. As this operation normally cannot be performed in the field, the saturated desiccator should be turned in for replacement and repair.

18. Capacitors.

The metal encased by-pass capacitors are replaced by removing the mounting screw from the top of the chassis base, and unsoldering the leads. Other capacitors are held by their leads only.

19. Sockets and Coils.

Replacement of sockets and coils will present no problem, as they are held to the chassis base with machine screws, washers, and nuts.

20. Miscellaneous Parts.

The replacement of any other parts of Radio Receiver and Transmitter BC-659-(*) will not present any problem.

21. Meter Protecting Fuse.

In series with the transmitter "B" supply there is a $\frac{1}{4}$ ampere fuse which protects the meter when the metering switch is at OPER. If a short circuit occurs in any of the plug "B" circuits of the transmitter, this fuse will burn out, but the meter will not be damaged. If a good Battery BA-39 is plugged in, and no voltage can be measured at either terminal of switch SW₁, it is likely that this fuse is burned out. Before replacing it, check the "B" circuit of the transmitter to locate and eliminate the short circuit which caused the fuse to burn out. Older sets do not have this fuse.

22. Volume Control.

Disconnect the volume control switch leads and with a $\frac{5}{8}$ -inch wrench remove the mounting nut. Install the new volume control

connecting leads to the proper terminals. Solder the leads carefully, replace the mounting nut securely, and assemble the front panel to the chassis base. Place the control levers in position, and tighten securely with mounting screws, being sure to use the lockwashers. Pull the power cable out into position and place the locking clamp in position, tightening securely.

To replace the volume control or meter switch, it will be necessary to remove the front panel. Remove the control levers from the meter control switch, the channel switch, and the volume control.

Remove the four screws in the corners of the recessed section of the front panel. Remove the leads from the meter. Loosen and remove the clamp holding the power cable, and push the cable in through the front panel to allow sufficient room between the front panel and the chassis base to remove and replace the various parts located directly behind the front panel.

Remove the leads from the PHONES and MIC jacks, or remove the jacks from the front panel, making sure to hold the jacks firmly from the back, as the mounting nuts have been punched to avoid the possibility of the jacks becoming loose.

23. Meter Switch.

This replacement is made in the same manner as the volume control. Be sure the leads are connected to the proper terminals.

24. Radio Receiver and Transmitter BC-659-(*), Normal Point-to-Point Resistance Values.

a. Normal resistance values obtained by point-to-point measurements on Radio Receiver and Transmitter BC-659-() in a satisfactory condition, are indicated below. Use of this data in connection with similar measurements on faulty equipment, combined with a logical circuit analysis, will frequently disclose the source of trouble in an improperly operating or dead receiver and transmitter.*

The readings were taken under the following conditions, and these must be reproduced exactly if comparison measurements on a faulty unit are to be effected.

(1) *Remove all Tubes.*—Besides producing erroneous readings, tube filaments can be burned out by the high ohmmeter current used in some ohmmeters.

(2) *Turn Meter Switch to OPER.*—This position affords the meter greatest protection (prevents high ohmmeter current from flowing through meter) and prevents erroneous readings by removing the shunting effect.

(3) *Remove Battery BA-41.*—Besides providing false ohmmeter readings, the ohmmeter may be damaged by battery current.

(4) Turn the volume knob fully clockwise, turning the power switch on and the volume control to maximum.

(5) The channel switch may be at "A" or "B".

(6) Both the microphone and headphone must be disconnected from set.

(7) All readings were taken on voltohmmeter unit of Signal Corps Test Set I-56-(&). The meter scale used should give the greatest usable deflection. In general, ohmmeter readings will be more accurate when taken on the upper two-thirds of the scale, and whenever possible, the range should be chosen that will give indications in this region.

b. Power and Control Cable Plug Point-to-Point Resistance Values BC-659-().*

All measurements made between plug pins and chassis. Pins on plug are identified by letters.

PIN No.	RESISTANCE TO CHASSIS
A	Open
B	Open
C	Open
D	Open
E	Open
F	1 Megohm minimum (Depends on current leakage through electrolytic Capacitor C ₃₁).
G	Open
H	0 Ohm

c. Internal Battery Plug (For Battery BA-41) Resistance Values BC-659-().*

All measurements made as indicated in chart below. Pins are identified by letters as shown in figure 13. The pin identifying letters do not appear on the plug.

READING BETWEEN	RESISTANCE
Pin A and Chassis	Open
Pin B and Chassis	Open
Pin C and Chassis	Open
Pin D and Chassis.	0 Ohm
Pin E and Chassis	Open
Pin A and Pin B	1 Megohm

d. Normal Choke, Coil and Transformer D-C Resistance Values BC-659-().*

DESCRIPTION		D-C RESISTANCE
CH ₁	Choke, r-f	.13 ohm
CH ₂	Choke, r-f	40 ohms
CH ₃	Choke, r-f	40 ohms
CH ₄	Choke, r-f	.13 ohm
CH ₅	Choke, r-f	40 ohms
CH ₆	Choke, r-f	10 ohms
CH ₇	Choke, r-f	.13 ohm
CH ₈	Choke, r-f	40 ohms
CH ₉	Choke, r-f	.13 ohm
CH ₁₀	Choke, r-f	.13 ohm
L ₁	Coil, Antenna Loading*	
	1-2	.024 ohm
L ₂	Coil, Power Amplifier Plate*	
	1-2	.012 ohm
	1-3	.009 ohm
	1-4	.007 ohm
L ₃	Coil & Shield, Power Amplifier*	
	1-2	.006 ohm
	1-3	.012 ohm
L ₄	Coil & Shield, Buffer Grid*	
	1-2	.107 ohm
	1-3	.034 ohm

*d. Normal Choke, Coil and Transformer D-C Resistance Values
BC-659-(*) (Cont.)*

	DESCRIPTION	D-C RESISTANCE
L ₅	Coil & Shield, Transmitter Oscillator*	
	2-1	.017 ohm
	2-3	.032 ohm
L ₆	Coil & Shield, r-f Grid*	
	2-4	.089 ohm
	1-3	.019 ohm
L ₇	Coil & Shield, Mixer Grid*	
	1-3	.019 ohm
L ₈	Coil & Shield, Receiver Oscillator*	
	1-2	.019 ohm
T ₁	Transformer, Microphone	
	1-2	3 ohms
	3-4	225 ohms
T ₂	Transformer & Shield, 1st i-f*	
	1-2	2.7 ohms
	3-4 and 5	2.7 ohms
T ₃	Transformer & Shield, 2nd i-f*	
	1-2	2.7 ohms
	3-4	2.7 ohms
T ₄	Transformer & Shield, 3rd i-f*	
	1-2	2.7 ohms
	3-5	2.7 ohms
	5-4	100,000 ohms
T ₅	Transformer & Shield, Discriminator*	
	1-2	1.7 ohms
	5-3	1.8 ohms
	5-4	.9 ohm
T ₆	Transformer, Output	
	1-2	750 ohms
	3-4	.35 ohm
		(with speaker dis- connected)

Refer to Radio Receiver and Transmitter BC-659-() Chassis Bottom View figure 10 and Schematic Diagram figure 24, for location of terminals that are not marked on parts.

e. Socket Terminal Resistance Values—BC-659-()*
(All measurements made between socket terminal and chassis)

STAGE	TUBE	TUBE SOCKET PIN NUMBERS							
		1	2	3	4	5	6	7	8
V ₁ Trans. r-f Power Amp.	VT-182	*1 megohm minimum	Open	2800 ohms	Open	...	2800 ohms	Open	*1 megohm minimum
V ₂ Trans. Buffer	VT-182	Open	Open	22,000 ohms	Open	...	22,000 ohms	Open	Open
V ₃ Trans. Oscillator	VT-185	Open	Open	Open	Open	Open	Open	...	Open
V ₄ Trans. React. Mod.	VT-185	Open	Open	Open	Open	Open	Open	...	Open
V ₅ Receiver r-f Amp.	VT-179	Open	Open	Open	0 ohms	0 ohms	470,000 ohms	Open	0 ohms
V ₆ Receiver r-f Amp.	VT-179	Open	Open	Open	0 ohms	0 ohms	0 ohms	...	0 ohms
V ₇ Receiver Mixer	VT-178	Open	Open	Open	270,000 ohms	Open	0 ohms	Open	0 ohms
V ₈ Receiver Xtal Osc.	VT-185	Open	Open	Open	1.47 megohms	Open	470,000 ohms	0 ohms	Open

e. Socket Terminal Resistance Values—BC-659-()—(Cont.)*
(All measurements made between socket terminal and chassis)

STAGE	TUBE	TUBE SOCKET PIN NUMBERS							
		1	2	3	4	5	6	7	8
V_9 Receiver i-f Amp. No. 1	VT-179	Open	Open	Open	0 ohms	0 ohms	4.5 ohms	Open	0 ohms
V_{10} Receiver i-f Amp. No. 2	VT-179	Open	Open	Open	0 ohms	0 ohms	4 ohms	Open	0 ohms
V_{11} Receiver Limiter	VT-179	Open	Open	Open	0 ohms	0 ohms	100,000 ohms	Open	0 ohms
V_{12} Receiver Diode Rect.	VT-183	Open	0 ohms	...	270,000 ohms	...	...	540,000 ohms	0 ohms
V_{13} Receiver Diode Rect. and d-c Amp.	VT-177	Open	Open	Open	270,000 ohms	Open	1.54 megohms	...	0 ohms
V_{14} Receiver a-f Power Amp.	VT-185	Open	Open	Open	...	...	Open	0 ohms	Open
Metering Socket		1.47 megohms	270,000 ohms	1.1 megohms	Open	1.022 megohms	Open	540,000 ohms	1.27 megohms

*Depends on current leakage through electrolytic Capacitor C₂₉.

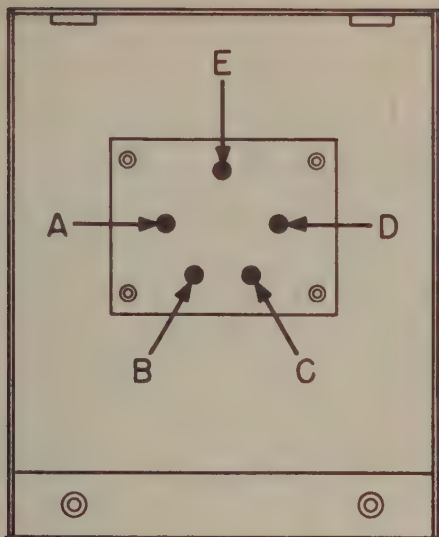


Figure 13. Radio Receiver and Transmitter BC-659-(*),—Pin View of Internal Battery Box Plug

25. Plate Supply Unit PE-117-C Point-to-Point Resistance Values.

a. Normal resistance values obtained by point-to-point measurements on Plate Supply Unit PE-117-C when functioning properly, are indicated below. Use of the data in connection with similar measurements on faulty equipment, combined with a logical circuit analysis, will disclose the source of trouble in an improperly operating or dead plate supply unit.

The readings were taken under the following conditions, and these must be reproduced exactly if comparison measurements on a faulty unit are to be effected.

- (1) Remove the rectifier Tube VT-195 and voltage regulator Tube VT-184 from their sockets.
- (2) Remove Vibrator VB-7-(*) from its socket.
- (3) Disconnect the power and control cable from Radio Receiver and Transmitter BC-659-(*).
- (4) Disconnect the battery leads from the vehicular battery.

(5) Fuse FU-38 (F₁) should remain in the fuse clips.

(6) All measurements made with voltohmmeter unit of Signal Corps Test Set I-56-(&).

In general, ohmmeter readings will be more accurate when taken on the upper two-thirds of the scale, and wherever possible, the range should be chosen that will give indications in this region.

b. Power and Control Cable Receptacle Continuity Measurements.

All measurements made between receptacle contact H and contact indicated.

Receptacle contacts are identified by letters.

RECEPTACLE CONTACT LETTER	RESISTANCE
A	100 ohms
B	Open
C	*Open
D	*Open
E	Open
F	*Open
G	.....

*Use low ohmmeter range. If a reading is obtained, reverse test leads. If electrolytic capacitor is normal no reading will be obtained in one portion of the test leads.

c. Normal Choke and Transformer D-C Resistance Values.

	DESCRIPTION	D-C RESISTANCE
CH ₁	Choke, r-f	.03 ohm
CH ₂	Choke, r-f	.03 ohm
CH ₃	Choke, "A"	
	1-2	3.5 ohms
	2-3	3.5 ohms
CH ₄	Choke, r-f	42 ohms
CH ₅	Choke, "B" filter	138 ohms
T ₁	Transformer	
	A1-10	.09 ohm
	9-12	.19 ohm
	2A-9 or 12	.098 ohm
	3A-11	.104 ohm
	7-8	.291 ohm
	4-5	57 ohms
	5-6	57 ohms

d. Socket Terminal Resistance Values.

All measurements made between socket terminals and (—) negative battery lead.
Link connections set for 6- or 12-volt operation.

SOCKET	SOCKET TERMINALS							
	1	2	3	4	5	6	7	8
Rectifier	Open	Open	60 ohms	...	55 ohms	Open	...	Open
Voltage Regulator	...	0 ohm	...	...	Open	...	...	...
Vibrator	0 ohm	100 ohms	100 ohms	*				
Electrolytic Capacitor	0 ohm	...	Open	...	Open	...	Open	...

*With 6-volt connection—100 ohms.

*With 12-volt connection—120 ohms.

26. Adapter M-399.

a. Description.

(1) Adapter M-399 is issued for installation in those sets which do not include it as a factory installation.

(2) Adapter M-399 consists of a metal bracket on which is mounted a terminal block and a d.p.d.t., OFF ALIGN, slide switch that is connected to a separate tube-socket-adapter-plug having a metering plug lead. The switch also is connected to the terminal block and has two separate leads.

(3) The bracket of Adapter M-399 is designed for permanent installation in Radio Receiver and Transmitter BC-659-(*). When it is installed, and the connections made properly, the adapter switch at ALIGN converts the receiver amplifier stage of the set into a vacuum-tube-voltmeter circuit utilizing the panel meter of the set. This permits the changing of channels as well as complete alignment of the set without using an external meter. With the adapter switch at OFF, Adapter M-399 does not interfere with the ordinary use of the set.

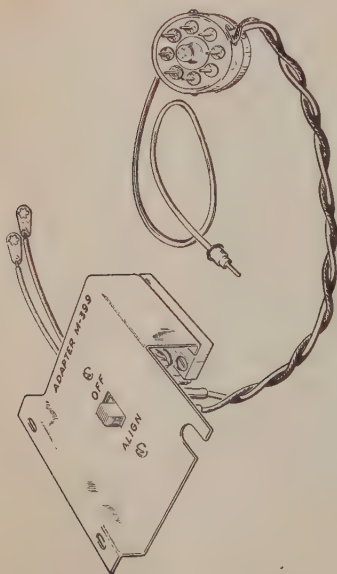


Figure 14.1. Adapter M-399
Top View

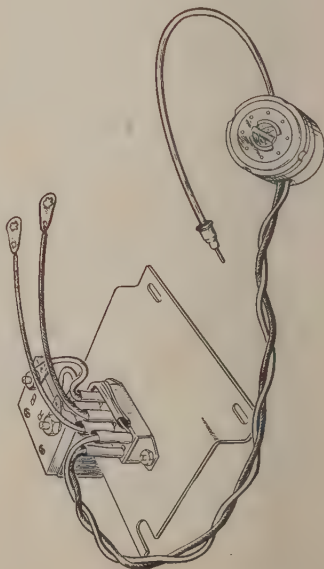


Figure 14.2. Adapter M-399
Bottom View

b. Installing Adapter M-399.

(1) Take receiver-transmitter from its case by removing all the screws around the edge of the panel and pulling the chassis forward.

(2) Use a $\frac{5}{16}$ " wrench (part of Maintenance Equipment ME-13-(&) or Maintenance Equipment ME-73), to disconnect the two leads attached to the panel meter of the set, and then connect these leads to terminals B and R of Adapter M-399, attaching the red lead to R.

(3) Take the two separate leads of Adapter M-399, and connect them to the meter terminals, attaching the red lead to the meter terminal nearest Transformer T₅.

(4) Remove the two screws from the edge of the top cover of Battery Box BX-4 that contains Battery BA-41, and mount the bracket of Adapter M-399 there, using the original screws.

(5) Remove the receiver power-amplifier Tube VT-185 from its socket and insert the adapter plug. Then insert the Tube VT-185 in the adapter plug socket, as shown (Fig. 14.3).

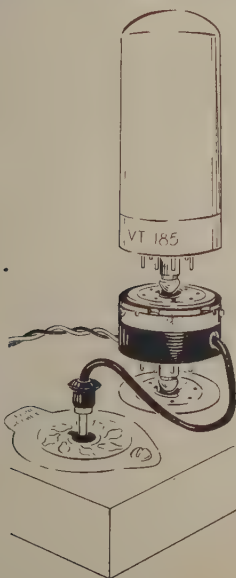


Figure 14.3. Adapter M-399, Pictorial View

on the chassis to the assigned channels. These trimmers are arranged in seven pairs, marked A1 (B1) to A7 (B7) on the chassis and are provided with dial cards. *ONLY these trimmers need to be adjusted when presetting channels. Do not disturb any other adjustments.*

c. While the adjustments described will probably seem difficult at first reading, after a few trials they will be found so simple that it is possible to completely preset this radio on two new frequencies within 10 minutes. Men assigned to this work must familiarize themselves thoroughly with the procedures, and practice constantly until they know them thoroughly. Most of the failures in these sets can be traced directly to carelessness in presetting. *Always check work carefully.*

d. For convenience in distinguishing between the controls for the two channels, all of the controls for one channel are labeled "A", and all of the controls for the other are labeled "B". The channel selector switch marked CHAN, on the panel of Radio Receiver and Transmitter BC-659-(*), and the two positions in the crystal sockets on top of the chassis are also labeled "A" and "B".

e. A metering socket is provided on the chassis of Radio Receiver and Transmitter BC-659-(*) for connecting a meter at various points in the circuit for alignment and test. The pin jacks on this socket are numbered from 1 to 8 and are connected to the various parts of the circuit so that when the common lead of an electronic voltmeter is connected to the *chassis (not the front panel)* of the set and the d-c probe of the electronic voltmeter is inserted into the pin jack indicated in the following table, the corresponding voltage is read on the electronic voltmeter:

Pin jack No. 1—Receiver oscillator grid voltage.

Pin jack No. 2—Receiver converter injection grid voltage.

Pin jack No. 3—Receiver limiter grid voltage.

Pin jack No. 4—Reactance modulator grid voltage (d-c amplifier output).

Pin jack No. 5—Transmitter buffer grid voltage.

Pin jack No. 6—Transmitter oscillator grid voltage.

Pin jack No. 7—Receiver discriminator output voltage.

Pin jack No. 8—Output of one discriminator diode. (VT-177).

f. The following special items of test equipment required to pre-set channels are furnished in or issued with Maintenance Equipment ME-13-(&) and Alignment Equipment ME-73:

(1) An electronic voltmeter for measuring voltages at the metering socket, which may be:

(a) Volt-ohmmeter I-107-(&), part of ME-13-(&). Refer to TM 11-306.

(b) The panel meter of Radio Receiver and Transmitter BC-659-(*) in conjunction with Adapter M-399.

(c) Any other electronic voltmeter such as Hickock Model 202, RCA Voltohmyst, etc.

(2) Alignment Tool TL-150 or TL-207.

(3) Adapter RS-259.

(4) Other tools such as hex socket wrench, screw drivers, etc.

g. These steps in setting up equipment can be followed regardless of the type of electronic voltmeter you use. Additional steps, as necessary, are given under the presetting procedures in paragraphs 28 and 29.

(1) Remove the chassis of the radio receiver and transmitter from its case by removing all screws or unfastening the catch clips around the edge of the panel and pulling the chassis forward toward you.

(2) Set switches SW₁ and SW₂ to OFF. Set panel meter switch to CHECK.

(3) Insert the required crystals in the proper channel sockets. The nameplates should face outward, away from each other. Plug in a handset.

(4) Set the locknuts on the trimmers A1 (B1) through A7 (B7) with Alignment Tool TL-207 (or other $\frac{5}{16}$ -inch wrench) for a fairly stiff "drag" on the trimmer adjusting shafts. *Do not tighten them so that trimmer shafts jam. Do not tighten locknuts further after presetting* as further tightening tends to change the adjustment and may damage the capacitors.

(5) Set each trimmer to its approximate setting as shown in the following chart:

APPROXIMATE TRIMMER SETTINGS

Channel	A1-B1 Rec. Osc.	A2-B2 Mixer	A3-B3 R-F Grid	A4-B4 Trans. Osc.	A5-B5 Buffer	A6-B6 P-A	A7-B7 P-A Plate
270	0.0	1.0	0.8	0.2	0.4	0.0	1.0
280	0.6	1.9	1.4	1.1	1.2	0.7	1.8
290	1.4	2.4	2.0	1.7	1.7	1.3	2.4
300	2.2	3.0	2.4	2.3	2.2	1.8	2.8
310	2.9	3.6	3.1	2.8	2.7	2.3	3.1
320	3.6	4.1	3.8	3.5	3.3	3.0	3.8
330	4.0	4.2	4.2	3.9	3.7	3.4	3.9
340	4.1	4.6	4.5	4.2	3.9	3.7	4.0
350	4.6	5.0	4.7	4.5	4.0	3.9	4.1
360	4.9	5.2	4.8	4.8	4.5	4.2	4.2
370	5.4	5.5	5.2	5.2	4.9	4.6	4.7
380	5.6	5.6	5.3	5.5	5.0	4.8	4.8
389	5.8	5.8	5.4	5.9	5.1	5.0	5.0

NOTE: Red dots on the trimmer shafts indicate the side of the slot that should be toward the dial card. The width of the slot is about 1/10 of a division. In case the red dot has worn off, its proper location can be found by fully meshing the capacitor. The end of the slot near the 0 of the 0-6 scale is the end that should carry the red dots.

CAUTION: In adjusting the trimmers in the following operations they need not be turned very far from the approximate settings shown in this chart. If it does appear necessary to turn them far from these settings, it means that some adjustment has been incorrectly made, or that these capacitors are defective. Recheck your previous steps and examine the capacitors for misalignment of plates, or breakage.

(6) Check the condition of Battery BA-41 by means of an electronic voltmeter by inserting the probe in pin jack No. 4 of the metering socket. Replace the battery if the voltage is less than 20 volts.

(7) Connect Radio Receiver and Transmitter BC-659-(*) to its source of power by joining the two halves of the power and control cable connector. If Case CS-79-(*) is to be used, insert Adapter RS-259 (part of ME-13-(&) and ME-73) between Battery BA-39

and its plug. Adapter RS-259 places a 500-ohm resistor in series with the high voltage lead to protect the transmitter tubes while making adjustments. If Plate Supply Unit PE-117-C is to be used, the adapter is not necessary because of the voltage regulation characteristics of this plate supply unit.

h. The procedure from this point depends upon the maintenance equipment to be used. After presetting, it is strongly recommended that, when tactical considerations permit, the set be given an operating test to determine that it has been tuned to the correct frequencies and is "getting out." Establish communication with another set known to be functioning properly on the same channels. The separation of the two sets should be at least 300 to 500 yards.

28. Presetting Procedure Using Volt-Ohmmeter I-107-(&) or Other Electronic Voltmeter.

a. Set up and calibrate Volt-Ohmmeter I-107-(&) as directed in TM 11-306. Connect the common lead alligator clip to the *chassis (not to the front panel)* of Radio Receiver and Transmitter BC-659-(*). The front panel, speaker, etc. are insulated from the chassis and you can't use them as a return.

b. Set panel meter switch to CHECK. Rotate VOLUME control fully clockwise (right). Set CHAN switch to A or B, whichever is to be the lower frequency channel. *Remember that the lower frequency channel must be preset first.*

c. The following steps preset the *receiver*. Do not press the microphone switch.

(1) To check crystal activity, insert the meter probe in pin jack No. 1 of metering socket. A meter reading of approximately -15 volts or more indicates a good crystal.

(2) Insert probe in pin jack No. 2 of metering socket, and tune A1 (or B1 if channel B is to be set first) for maximum meter reading.

(3) Tune A2 (B2) for maximum noise in the handset.

(4) Tune A3 (B3) for maximum noise in the handset.

(5) Tune A7 (B7) for maximum noise in the handset.

NOTE: In steps (3), (4), and (5), it is recommended that probe be inserted in pin jack No. 8 of metering socket and that the meter be observed for a slight peak at maximum noise peak in order to obtain a fine adjustment. Use low range of meter for best sensitivity.

d. The following steps preset the *transmitter*. Press the microphone switch *only* while making adjustments. SW₁ and SW₂ in OFF position.

(1) Insert probe in pin jack No. 3 of metering socket. *Slowly* tune A4 (B4) about its approximate setting. You will see that more than one peak can be found. Choose the *highest peak near* the approximate setting and adjust A4 (B4) for maximum.

NOTE: If difficulty is experienced in distinguishing the right peak, the first r-f amplifier tube may be removed FOR THIS STEP ONLY. This is Tube VT-179 (V₅). (See Fig. 4).

(2) Insert probe in pin jack No. 4 of metering socket, press microphone switch, and note the reading on the electronic voltmeter. Then *very carefully and slowly* make a *slight* readjustment of A4 (B4) in the direction that brings the meter reading to -6 volts. Listen in the handset while making this adjustment. If a rushing background noise comes up, A4 (B4) has been moved too far. Go back to step (1) and get back on the correct peak again. Check that it is now possible to hear your voice in the phones when speaking into the microphone.

(3) Insert probe in pin jack No. 5 of metering socket, and tune A5 (B5) for maximum meter reading.

(4) Check that the panel meter switch is at CHECK. The rest of these adjustments will be made using the panel meter.

(5) Set SW₁ to ON. Tune A6 (B6) for maximum reading on the panel meter.

(6) Set SW₂ to ON. Turn panel meter switch to OPER. QUICKLY tune A7 (B7) for MINIMUM on the panel meter.

CAUTION: Do not press microphone switch until you are all set to make the adjustment swiftly, as it is easy to ruin the power amplifier tube during this adjustment.

e. The lower frequency channel is now completely preset. Set SW₁ and SW₂ to OFF, panel meter switch to CHECK, and CHAN switch to the other channel. Preset this channel in the same manner, tuning the other set of trimmers.

f. Check that SW₁ and SW₂ are ON, restore the set to its case, and connect the antenna that will be used. Recheck A7 (B7) for minimum. There is a covered opening at the rear top of the case for this purpose. The panel meter should now read between 1.8 and 3 (OPER).

29. Presetting Procedure Using Adapter M-399.

a. Adapter M-399 converts the receiver power amplifier stage and panel meter into an electronic voltmeter. If Adapter M-399 is not already installed in the set, installation instructions can be found in paragraph 26b. Before using the adapter for presetting it is necessary that its proper functioning be checked. Set the adapter switch to ALIGN, VOLUME control full on, and note the panel meter reading. Turn the VOLUME control all the way back to the left from full on, and note the change in the meter reading. If the change is more than one division, try other VT-185 tubes in the adapter socket (Radio Receiver and Transmitter BC-659-(*) has four) until one is found that is satisfactory. Normal tubes should satisfy this condition and should give a meter reading between 1.5 and 2.5. Next turn the VOLUME control full on. Note the meter reading with the probe free (held away from the set). Then ground the probe to the *chassis*, and if the meter reading does not increase at least five divisions check Tube VT-185 and Battery BA-40. Replace either or both as necessary.

b. Set Adapter M-399 switch to ALIGN. Set the panel meter switch to CHECK. Rotate VOLUME control *fully* clockwise (right); set CHAN switch to A or B, whichever is to be the lower frequency channel. *Remember that the lower frequency channel will be preset first.*

c. The following steps preset the *receiver*. Do not press the microphone switch.

(1) To check crystal activity, insert probe in pin jack No. 1 of metering socket. With VOLUME control fully clockwise (right), the meter reading should be approximately zero for good crystals.

(2) Insert probe in pin jack No. 2 of metering socket, and tune A1 (B1) for minimum on the meter.

(3) Tune A2 (B2) for maximum noise in the handset.

(4) Tune A3 (B3) for maximum noise in the handset.

(5) Tune A7 (B7) for maximum noise in the handset.

(6) Repeat steps (3), (4), and (5).

NOTE: In steps (3), (4), and (5), it is recommended that probe be inserted in pin jack No. 8 of metering socket and that the meter be observed for a slight dip at maximum noise peak in order to obtain a fine adjustment. VOLUME control should be full on.

d. The following steps preset the *transmitter*. Press the microphone switch only while making adjustments. SW₁ and SW₂ in OFF position.

(1) Insert probe in pin jack No. 3 of metering socket. *Slowly* tune A4 (B4) about its approximate setting. You will find more than one dip. Choose the peak that will give the *minimum* reading on the meter and still be *near* the approximate setting. Tune A4 (B4) accurately for *minimum* on this peak.

NOTE: If difficulty is experienced in distinguishing the right peak, the first r-f amplifier tube may be removed for this step only. This is Tube VT-179 (V₅). (See Figure 4).

(2) Before the next presetting step it is necessary to calibrate the meter. A Battery BA-41 that is known to be good *must* be in the set. Note the meter reading with the probe free (held away from the set). Then note the reading with the probe grounded to the *chassis*. Reduce the VOLUME control setting until the difference between the two readings is exactly 4½ divisions. *Do not disturb the volume control setting during the following operations.*

(3) Press microphone switch and note the reading with the probe free. Insert probe in pin jack No. 4 of metering socket. Then very carefully and slowly make a *slight* readjustment of A4 (B4) in the direction that brings the meter reading to *exactly one division* less than what it was with the probe free. Listen in the phones while making this adjustment. If a rushing background noise comes up A4 (B4) has been moved too far. Go back to step (1) and get back on the correct dip again. Check that it is now possible to hear the voice in the phones when speaking into the microphone.

(4) Insert probe in pin jack No. 5 of metering socket, and tune A5 (B5) for minimum on the meter.

(5) Set Adapter M-399 switch to OFF. Check that panel meter switch is at CHECK. The rest of these adjustments will be made using the panel meter in its normal circuits.

(6) Set SW₁ to ON. Tune A6 (B6) for maximum reading on the panel meter.

(7) Set SW₂ to ON. Turn panel meter switch to OPER. QUICKLY tune A7 (B7) for MINIMUM on the panel meter.

CAUTION: Don't press microphone switch until you are all set to make the adjustment swiftly as it is easy to ruin the power amplifier tube during this adjustment.

WARNING: It should not be necessary to turn A7 (B7) more than slightly from the setting made in c(5) above. In fact it should be found that A7 (B7) is already part way "into the dip." If such is not the case, it is probable that A4 (B4) is adjusted to a false peak and it will be necessary to go back to step (1) and start over.

e. The lower frequency channel is now completely preset. Set SW₁ and SW₂ to OFF, panel meter switch to CHECK, and CHAN switch to the other channel. Preset this channel in the same manner, tuning the other set of trimmers.

f. Check that SW₁ and SW₂ are ON, restore the set to its case, and connect the antenna that will be used. Recheck A7 (B7) for minimum. There is a covered opening at the rear top of the case for this purpose. The panel meter should now read between 1.5 and 3 (OPER).

30. I-F and Discriminator Alignment.

WARNING: Only trained repair personnel in units furnished with the special items of equipment necessary, and authorized to perform such work, will adjust i-f and discriminator trimmers. Many sets turned in for repair are inoperative only because of unauthorized tampering with these trimmers. Don't deprive an outfit of a radio set when it is sorely needed. A radio set turned in for repairs means that some unit is without communication.

a. In addition to the equipment mentioned in paragraph 27f, a means of generating a signal at the intermediate frequency (4.3 megacycles) is required. Maintenance Equipment ME-13-(&) includes Oscillator VO-4-(&). Alignment Equipment ME-73 includes a 4.3 megacycle crystal that is used in the receiver oscillator circuit.

b. Set up equipment as in steps (1), (2), and (7) in paragraph 27g. Remove both crystals from the set.

c. The following alignment procedure using Maintenance Equipment ME-13-(&) is based on the use of Volt-ohmmeter I-107-(&) as an indicator. However, any other electronic voltmeter will serve equally well.

(1) Set up and calibrate Volt-ohmmeter I-107-($\&$) as indicated in TM 11-306. Connect the common lead alligator clip to the chassis of Radio Receiver and Transmitter BC-659-(*).

(2) Set up Oscillator VO-4-($\&$) as indicated in TM 11-306 and set its switch to 4.3 megacycles. Turn ATTENUATION control clockwise (right) only enough to turn Oscillator VO-4-($\&$) on.

NOTE: During i-f alignment, reduce the output Oscillator VO-4-($\&$) whenever possible, by turning the ATTENUATION control still further to the right. Work with as weak a signal as possible.

(3) Turn Radio Receiver and Transmitter BC-659-(*) on by means of volume control. Do not connect microphone.

(4) Connect the "hot" lead of Oscillator VO-4-($\&$) to pin jack No. 4 of the mixer tube V₇ (VT-178). (Fig. 10).

(5) Insert meter probe in pin jack No. 3 of metering socket. Adjust secondary (bottom) and primary (top) of i-f transformers T₄, T₃, and T₂ in that order for maximum on Volt-ohmmeter I-107-($\&$). (Figs. 4 and 10).

(6) Readjust primary and secondary of T₂, T₃, and T₄ in that order. I-f amplifier is now aligned.

(7) Insert probe in pin jack No. 7 of metering socket. Using full output of VO-4-($\&$) and lowest range of voltmeter, adjust secondary of discriminator transformer T₅ (fig. 10) for zero volts (*with alignment tool removed*).

(8) Insert probe in jack 8 of metering socket and adjust T₅ primary for maximum on I-107-($\&$).

(9) Check secondary of T₅ as in step (7) and readjust to zero if necessary. Discriminator is now aligned.

(10) Turn set off, disconnect test equipment, and replace crystals. Be sure crystals are inserted in the proper channel sockets. Check presetting adjustments for both channels.

d. The following alignment procedure uses Alignment Equipment ME-73 and Adapter M-394.

(1) Check for proper functioning of the adapter circuit as in paragraph 29a.

(2) Insert 4.3 megacycle crystal (part of ME-73) in either crystal socket and set CHAN switch accordingly. Set adapter switch to ALIGN.

(3) Rotate VOLUME control of Radio Receiver and Transmitter BC-659-(*) fully clockwise (right).

(4) Insert probe in pin jack No. 3 of metering socket. Adjust secondary (bottom) and primary (top) of i-f transformers T_4 , T_3 , and T_2 in that order for minimum on the panel meter (Figs. 4 and 10). If meter goes to zero reduce volume control.

(5) Readjust primary and secondary of T_2 , T_3 and T_4 in that order. I-f amplifier is now aligned.

(6) Note the panel meter reading with the probe grounded to the chassis. (VOLUME full on.) This is a zero voltage reading.

(7) Insert probe in jack 7 of metering socket. Adjust secondary of discriminator transformer T_5 (Fig. 10) until the meter indication is the same (*with alignment tool removed*) as in step (6).

(8) Insert probe in jack 8 of metering socket and adjust T_5 primary for minimum on panel meter.

(9) Check secondary of T_5 as in step (7) and readjust to zero volts if necessary. Discriminator is now aligned.

(10) Turn set off, set adapter switch to OFF, and remove 4.3-megacycle crystal. Replace the channel crystals in their proper sockets and check presetting adjustments for both channels.

31. Neutralization.

a. Neutralization of the final power amplifier stage should not be necessary unless the original setting of the neutralizing capacitors has been accidentally changed. Neutralizing capacitors C_4 and C_5 are accessible from the bottom of the chassis (Fig. 10). Do not move them unless it actually becomes necessary to reneutralize the final power amplifier stage.

b. To check neutralization:

(1) Remove set from case. Turn panel meter switch to CHECK. Set SW₂ to OFF and CHAN switch to A.

(2) Press microphone switch and tune A7 through its range, watching for a dip on the panel meter.

(3) Repeat steps (1) and (2) for channel B.

(4) If the dip is more than one division, the stage must be neutralized.

c. To neutralize:

(1) Set CHAN switch to the higher frequency channel.

(2) Adjust C₄ and C₅ (Fig. 10) equally in small steps, checking between adjustments for dip as in 31b(2) above until the dip is less than one division. Settings of C₄ and C₅ must be kept approximately equal. Check by observing the mesh of the plates.

(3) Check dip on the other channel. The same adjustment of C₄ and C₅ must serve for both channels.

d. Set SW₁ to ON and panel meter switch to OPER. Restore set to its case.

32. Operation Checks.

a. The metering socket and panel meter of Radio Receiver and Transmitter BC-659-(*) afford excellent means of quickly checking the set for normal operation. The values given below should be considered nominal. On the higher frequency channels some voltages at the metering socket may be normally less than those shown. If readings are radically different from those given below, check the presetting adjustments and condition of batteries and tubes before investigating the circuit for faults.

NOTE:

Figures 15 to 26 give voltage readings, frequencies, and parts locations to assist servicing personnel in replacing and servicing Radio Sets SCR-609-A and SCR-610-A.

b Voltages at Metering Socket.

(measured with an electronic voltmeter)

Pin Jack No.	Volts	Remarks
1	- 15v or more	Receive position
2	- 4v or more	Receive position
4	- 5.5 to -6v	Transmit position
5	- 15v or more	Transmit position
6	- 8v or more	Transmit position

c. Readings on Panel Meter

(transmit position)

SW Position	Reading	Remarks
FIL	2 or more	.....
PLATE	2 or more	.....
CHECK	1.5 or more	.....
OPER	less than 1	Antenna disconnected
OPER	1.8 to 3	Antenna connected

Tube	1LH4	1LC6	1LN5	1291	1294	VR 90-30	1299	QMG159 CK1005
Basing	Lock-In	Lock-In	Lock-In	Lock-In	Lock-In	Small Octal 7 pin	Lock-In	Small Octal 8 pin
Pin 1	Filament Positive	Filament Positive	Filament Positive	Filament Positive	Heater	No Connection	Filament Positive	Shield
Pin 2	Triode Plate	Plate	Plate	Plate (Triode #2)	Internal Shield	Cathode	Plate	No Connection
Pin 3	No Connection	Anode Grid	Screen Grid	Grid (Triode #2)	No Connection	Jumper to Pin 7	Screen Grid	Plate (Right)
Pin 4	Diode Plate	Oscillator Grid	Suppressor Grid	Filament Center	Plate	No Connection	No Connection	No Connection
Pin 5	No Connection	Screen Grid	Internally Connected to Pin 8	No Connection	No Connection	Anode	No Connection	Plate (Left)
Pin 6	Control Grid	Control Grid	Control Grid	Grid (Triode #1)	No Connection	No Pin	Control Grid	Filament
Pin 7	No Connection	No Connection	No Connection	Plate (Triode #1)	Cathode	Jumper to Pin 3	Filament Center & Beam Plates	No Connection
Pin 8	Filament Positive	Filament Positive	Filament Negative	Filament Negative	Heater	No Connection	Filament Negative	Filament

Figure 15. Radio Receiver and Transmitter BC-659(*), and Plate Supply Unit PE-117-C Tube Base Connections

V T. Type No.	Comm. Type No.	No. Used	Use	Plate		Screen		Filament		Grid		Plate Resis. Meg- ohms	Power Out- put MW	Am- p. Fac- tor	Mu- tual Cond. mmho	Type	Base
				Volts	Ma.	Volts	Ma.	Volts	Ma.	Volts	Ma.						
VT-177	1LH4	1	Diode & d-c Amp.	90	.15			1.4	50	0	0	.240		65	275	Diode High mu Triode	5-AG
VT-178	1LC6	1	Converter	90	.75	35	.7	1.4	50	0	0	.650			275	Penta Grid Converter	7-AK
VT-179	1LN5	4	r-f Amp. r-f Amp. i-f Amp. Limiter	90	1.6	90	.35	1.4	50	0	0	1.1			800	r-f Amplifier Pentode	7-AO
VT-182	1291	2	Buffer Double & Pwr. Amp.	180	15 per section			1.4	220	0	0		2.82 Watts	21	1850	Hi-Frequency Double Triode	Parallel Filaments
VT-183	1294	1	Diode Rectifier	10 RMS	5 Aver- age			1.4	150							Cathode Hi-Frequency Diode	
VT-184	VR- 90/30	1 Used in PE-117-C	Voltage Regulator	90	10/30											Gaseous, Diode Voltage Regulator	
VT-185	1299	4	Recvr. Osc. Audio P-A Trans. Osc. React. Mod.	90	9.5	90	1.6	1.4	220	-6	0	.008	270		2100	Beam Power Amplifier	
VT-195	QMG 159 CK-1005	1 Used in PE-117-C	Rectifier	200	65			6.3	100								

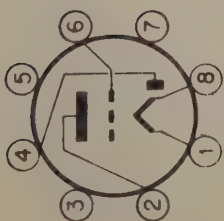
Figure 16. Radio Receiver and Transmitter BC-659-(*), and Plate Supply Unit PE-117-C, Vacuum Tube Specifications

Channel No.	Crystal Fundamental Frequency	Receiver and Transmitter	Channel No.	Crystal Fundamental Frequency	Receiver and Transmitter
270	5675Kc	27000Kc	300	6425Kc	30000Kc
271	5700	27100	301	6450	30100
272	5725	27200	302	6475	30200
273	5750	27300	303	6500	30300
274	5775	27400	304	6525	30400
275	5800	27500	305	6550	30500
276	5825	27600	306	6575	30600
277	5850	27700	307	6600	30700
278	5875	27800	308	6625	30800
279	5900	27900	309	6650	30900
280	5925	28000	310	6675	31000
281	5950	28100	311	6700	31100
282	5975	28200	312	6725	31200
283	6000	28300	313	6750	31300
284	6025	28400	314	6775	31400
285	6050	28500	315	6800	31500
286	6075	28600	316	6825	31600
287	6100	28700	317	6850	31700
288	6125	28800	318	6875	31800
289	6150	28900	319	6900	31900
290	6175	29000	320	6925	32000
291	6200	29100	321	6950	32100
292	6225	29200	322	6975	32200
293	6250	29300	323	7000	32300
294	6275	29400	324	7025	32400
295	6300	29500	325	7050	32500
296	6325	29600	326	7075	32600
297	6350	29700	327	7100	32700
298	6375	29800	328	7125	32800
299	6400	29900	329	7150	32900

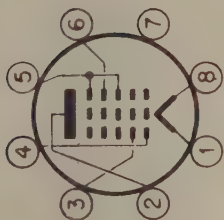
Figure 17. Radio Receiver and Transmitter BC-659(*) Channel Numbers and Crystal Frequencies

Channel No.	Crystal Fundamental Frequency	Receiver and Transmitter	Channel No.	Crystal Fundamental Frequency	Receiver and Transmitter
330	7175Kc	33000Kc	360	7925Kc	36000Kc
331	7200	33100	361	7950	36100
332	7225	33200	362	7975	36200
333	7250	33300	363	8000	36300
334	7275	33400	364	8025	36400
335	7300	33500	365	8050	36500
336	7325	33600	366	8075	36600
337	7350	33700	367	8100	36700
338	7375	33800	368	8125	36800
339	7400	33900	369	8150	36900
340	7425	34000	370	8175	37000
341	7450	34100	371	8200	37100
342	7475	34200	372	8225	37200
343	7500	34300	373	8250	37300
344	7525	34400	374	8275	37400
345	7550	34500	375	8300	37500
346	7575	34600	376	8325	37600
347	7600	34700	377	8350	37700
348	7625	34800	378	8375	37800
349	7650	34900	379	8400	37900
350	7675	35000	380	8425	38000
351	7700	35100	381	8450	38100
352	7725	35200	382	8475	38200
353	7750	35300	383	8500	38300
354	7775	35400	384	8525	38400
355	7800	35500	385	8550	38500
356	7825	35600	386	8575	38600
357	7850	35700	387	8600	38700
358	7875	35800	388	8625	38800
359	7900	35900	389	8650	38900

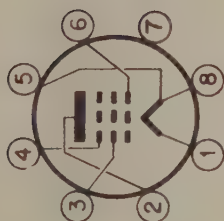
Figure 17. Radio Receiver and Transmitter BC-659(*) Channel Numbers and Crystal Frequencies (Continued)



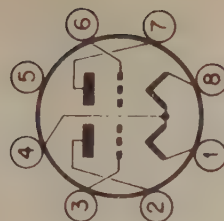
VT-177 BOTTOM VIEW
(RMA TYPE 1LH4)



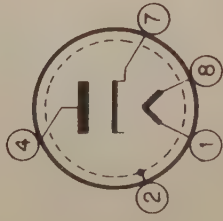
VT-178 BOTTOM VIEW
(RMA TYPE 1LC6)



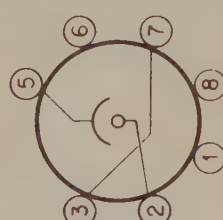
VT-179 BOTTOM VIEW
(RMA TYPE 1LN5)



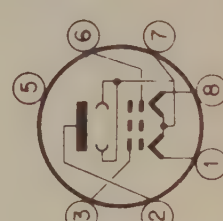
VT-182 BOTTOM VIEW
(RMA TYPE 1291)



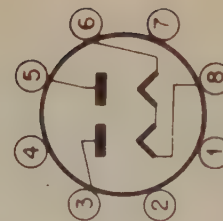
VT-183 BOTTOM VIEW
(RMA TYPE 1294)



VT-184 BOTTOM VIEW
(RMA TYPE VR-90-30)

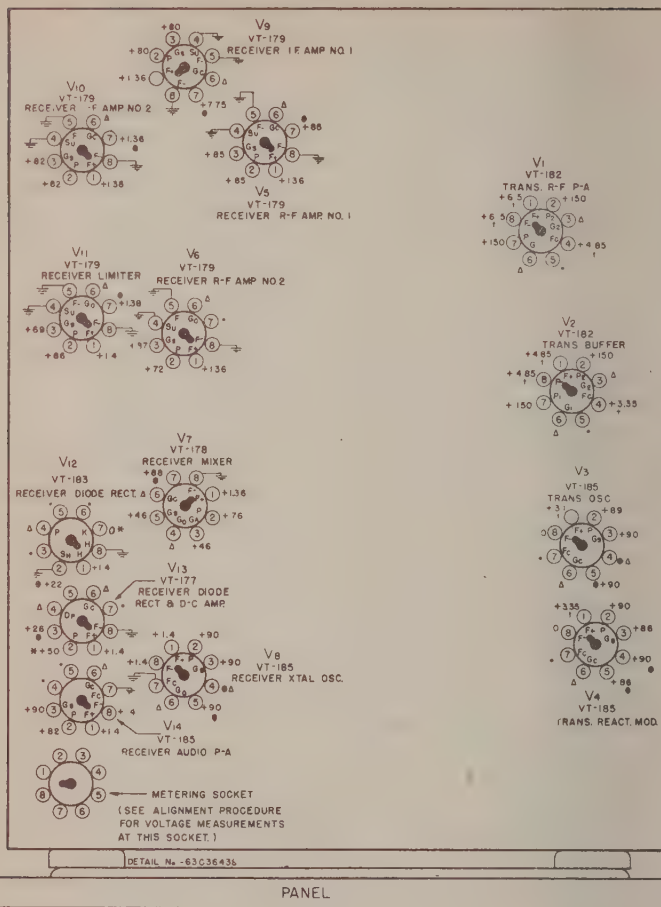


VT-185 BOTTOM VIEW
(RMA TYPE 1299)



VT-195 BOTTOM VIEW
(RMA TYPE CK-1005)

Figure 18. Radio Receiver and Transmitter BC-659-(*) and Plate Supply Unit PE-117-C,—Tube Base Connections and Element Layout



NOTE: VOLTAGES MEASURED IN 'RECEIVE' POSITION, EXCEPT WHERE NOTED. ALL VOLTAGES MEASURED BETWEEN CHASSIS AND SOCKET TERMINAL INDICATED; VALUES ARE IN DC VOLTS.

VOLUME CONTROL FULL ON.
METER SWITCH AT 'OPERATE'.
CHANNEL SWITCH 'A' OR 'B'.

VOLTAGES SHOWN ARE OBTAINED BY USING FRESH BATTERIES.
ALL VALUES SHOWN ARE NOMINAL.

VOLTAGES MEASURED WITH TUBE VOLTMETER. (R.C.A. VOLT OHMYST, STOCK NO-165), VOLT-OHMMETER I-107-A or B, OR EQUIVALENT.

* WITH ZERO DISCRIMINATOR VOLTS.
† WITH TRANSMITTER SWITCH ON 7V. WITH TRANSMITTER SWITCH OFF.
• WITH TRANSMITTER SWITCH OFF.
• NO EXTERNAL CONNECTION.
Δ NOT MEASURED.

● SOCKET TERMINAL USED AS TIE OR DUMMY LUG ONLY. NO TUBE ELEMENT CONNECTS TO THIS LUG.

Figure 19. Radio Receiver and Transmitter BC-659(*),—Tube Socket Voltage Diagram

NOTE.— VOLTAGE MEASUREMENTS MADE UNDER THE FOLLOWING CONDITIONS:

- 1 PLATE SUPPLY UNIT PE-117-C CONNECTED TO RADIO RECEIVER AND TRANSMITTER BC-659-KH WHICH IS KNOWN TO BE IN GOOD OPERATING CONDITION
- 2 VOLTAGE INPUT TO PE-117-C 6 OR 12 VOLTS
- 3 CAUTION—LINK CONNECTIONS MUST BE SET FOR PROPER VOLTAGE
- 4 SET FOR 12 VOLTS INDICATES VOLTAGE INPUT LE (6) WITH 12 VOLT INPUT (12) WITH 12 VOLT INPUT VOLTAGE READINGS NOT SO MARKED ARE SAME FOR BOTH 6 & 12 VOLT INPUTS
- 5 3R WITH BC-659-KH IN RECEIVE POSITION
- 6 T WITH BC-659-KH IN TRANSMIT POSITION
- 7 RBT WITH BC-659-KH IN RECEIVE & TRANSMIT POSITIONS
- 8 VOLTAGES MEASURED WITH VACUUM TUBE VOLTMETER.
- 9 ALL READINGS ARE IN D-C VOLTS EXCEPT WHERE INDICATED AS A-C
- 10 ALL VOLTAGES MEASURED BETWEEN POINT INDICATED AND B-(BROWN LEAD)
- 11 5R WITH VOLTAGE REGULATOR VT-184 WORKING
- 12 CURRENT DRAIN
- 13 WITH 6 VOLT INPUT —
- 14 2.5 AMPERES IN RECEIVE POSITION
- 15 3.5 AMPERES IN TRANSMIT POSITION
- 16 WITH 12 VOLT INPUT —
- 17 2 AMPERES IN RECEIVE POSITION
- 18 3 AMPERES IN TRANSMIT POSITION
- 19 7 ALL VALUES SHOWN ARE NOMINAL

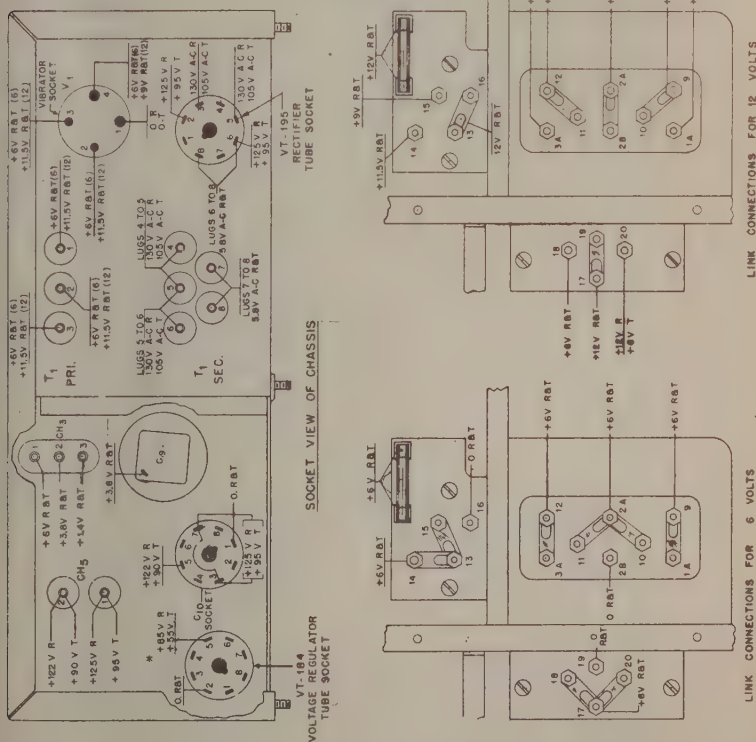


Figure 20. Plate Supply Unit PE-117-C, Voltage Diagram

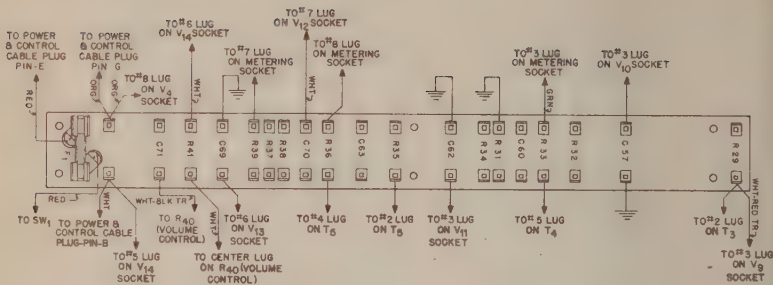


Figure 21A. Radio Receiver and Transmitter BC-659-(*),—Terminal Board—Front View, Showing Circuit Connections

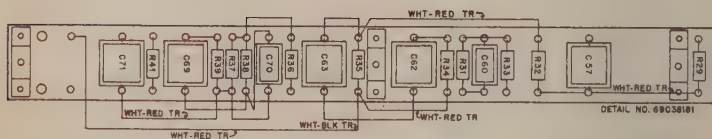


Figure 21B. Radio Receiver and Transmitter BC-659-(*),—Terminal Board—Back View, Showing Connections

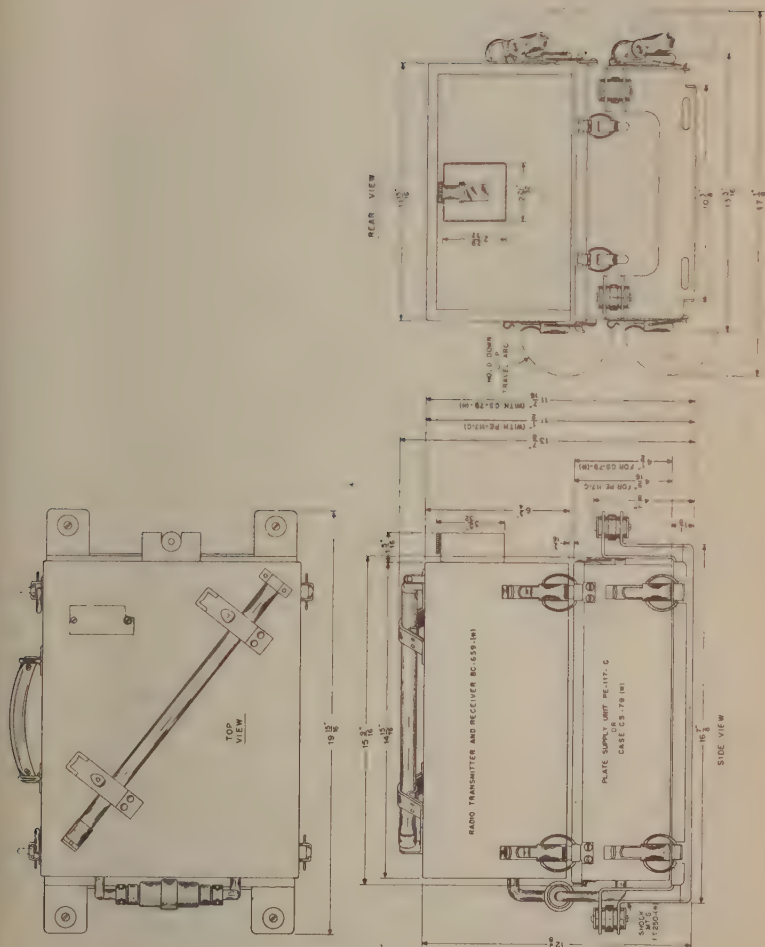


Figure 22. Radio Sets SCR-609-A and SCR-610-A,—Outline Dimensional Detail

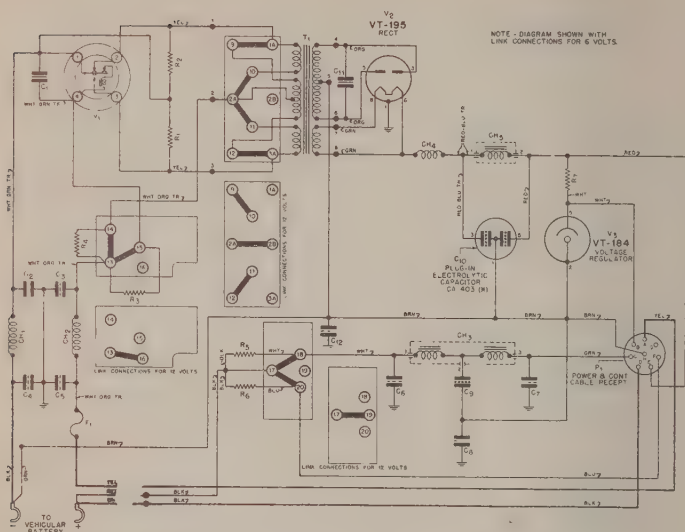


Figure 23.1. Plate Supply Unit PE-117-C,—Schematic Diagram

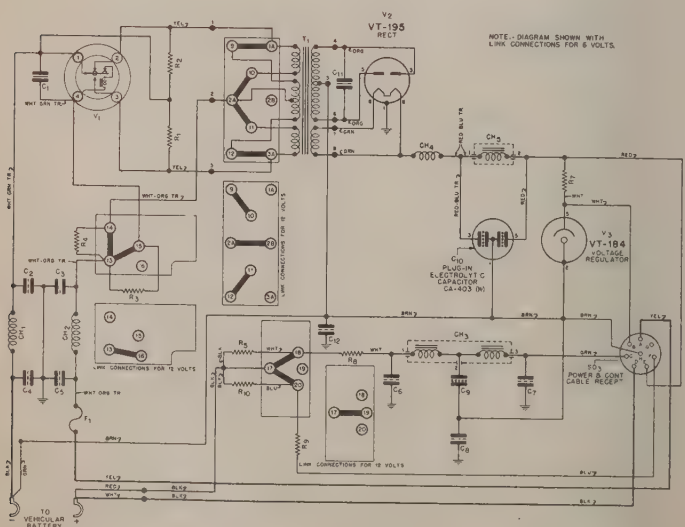


Figure 23.2 Plate Supply Unit PE-117-C,—Schematic Diagram Effective after Serial No. 12395 on Order 8459-Phila-43.

SECTION V
SUPPLEMENTARY DATA

	Page
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34 List of Manufacturers.....	151
35 RMA Color Codes for Resistors and Capacitors.....	153

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*)

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
C ₁	#1	3D9010-B	Capacitor Fixed, mica; 10 μf , $\pm 5\%$, 300 w-v d-c. Brown, black, gold. $1\frac{1}{16}$ " long x $\frac{1}{16}$ " wide x $1\frac{1}{64}$ " thick.	Coupling L ₁ to L ₂ .	2 1469 10 5R 23 POM 26	21B6628
C ₂	#2	3D9035V-4	Capacitor Variable, air; 35 μf , maximum (rotor wiper lug on left hand side). Also C ₈ .	Tuning L ₂ —Channel B.	1 Special	19K29854
C ₃	#2	3D9035V-2	Capacitor Variable, air; 35 μf maximum, 3.0 μf minimum spring wiper of phosphor bronze, lug of copper all other metal parts of brass. Rotor wiper lug on left hand side; overall dimensions: $1\frac{1}{2}$ " long x $1\frac{5}{16}$ " long x $1\frac{5}{8}$ " high. Also C ₇	Tuning L ₂ —Channel A.	1 Special	19K29855

C ₄	#2	3D9001V	Capacitor Variable, ceramic; 1.0 to 3.5 μ f; $\frac{5}{8}$ " wide x $\frac{27}{64}$ " long x .120-.137" thick. All metal parts silver-plated. Also C ₅ .	Neutralizing V ₁ .	7 820	20A34354
C ₅			Capacitor Same as C ₄ .	Neutralizing V ₁ .		20A34354
C ₆	#23		Capacitor Fixed, ceramic; .005 μ f, +80% -20%, 300 w-v d-c. $1\frac{1}{16}$ " long x $\frac{5}{16}$ " diameter. or: Fixed, paper; .005 μ f, +80% -20%, 300 w-v d-c. $1\frac{1}{16}$ " long x $\frac{5}{8}$ " wide x $\frac{9}{32}$ " thick. or: Fixed, molded paper; .005 μ f, +80% -20%, 300 w-v d-c. Color coded: green, black, red, orange. $\frac{7}{8}$ " long x $\frac{9}{16}$ " wide. or: Fixed, molded paper; 5,000 μ f, +80% -20%, 300 w-v d-c. Color coded: green, black, red, orange, black. $1\frac{1}{32}$ " long x $\frac{5}{8}$ " wide x $\frac{3}{4}$ " thick.	B+ by-pass, V ₁ .	1 Special 23 339	21A38631 8A38632 8A41614 8K41615

#Available in Depot Stock.

The word "Special" indicates part made for or by the Contractor especially for this equipment and is not commercially available.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
C ₆ (Cont.) C ₇			Also C ₁₀ , C ₁₁ , C ₁₇ , C ₂₃ , C ₂₄ , C ₃₁ , C ₃₂ , C ₃₆ , C ₃₇ , C ₄₃ , C ₄₆ , C ₄₇ , C ₄₈ , C ₄₉ , C ₅₂ , C ₅₃ , C ₅₆ , C ₅₇ , C ₆₁ , C ₆₂ , C ₆₃ , C ₆₉ . or: Fixed, mica; .01 μ f., +14% -6%, 300 w-v d-c. (Used in some sets.) Capacitor Same as C ₃ .	B+ by-pass, V ₁ . Tuning L ₃ —Channel B.	2 1467X	21B6609
C ₈			Capacitor Same as C ₂ .	Tuning L ₃ —Channel A.		
C ₉	#4	3DA1-48	Capacitor Fixed, mica; .001 μ f. +14% -6%, 300 w-v d-c. Color coded: brown, black, red. $1\frac{1}{16}$ " long, x $\frac{7}{16}$ " wide x $1\frac{1}{4}$ " thick. (Also C ₃₃ , C ₃₈ , C ₄₁).	Coupling V ₈ to V ₁ .	2 1468X 10 5LL 23 XOM	21B6611
C ₁₀			Capacitor Same as C ₆ .	Bias resistor by-pass, V ₁ .		
C ₁₁			Capacitor Same as C ₆ .	Filament by-pass.		

C ₁₂	#4	3D9050-V-29	Capacitor Variable, air; 50 μ f, maximum. Rotor wiper lug on left hand side. Also C ₃₉ , C ₃₄ , C ₄₄ .	Tuning L ₄ —Channel B.	1 Special	19K29857
C ₁₃	#4	3D9050V-30	Capacitor Variable, air; 50 μ f, maximum. Rotor wiper lug on right hand side. Also C ₃₅ , C ₄₀ , C ₄₅ .	Tuning L ₄ —Channel A.	1 Special	19K29856
C ₁₄	#5	3D9020-3	Capacitor Fixed, ceramic; 20 μ f, $\pm 5\%$. Negative temperature coefficient .00010 μ f/ μ f/ $^{\circ}$ C. 500 w-v d-c. Color coded: red, red, black, black, green. .460" long x .5" diameter. or: Fixed, ceramic; 20 μ f, $\pm 5\%$. Negative temperature coefficient .0000 $^{\circ}$ C. .625" long x .187" diameter. Also C ₁₅ , C ₅₁ , C ₅₄ , C ₅₈ .	Padding, T ₃ primary	7	21A31492
C ₁₅			Capacitor Same as C ₁₄ .	Padding L ₄	24 F-20	21A36331

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
C16	#1	3D9250-24	Capacitor Fixed, mica; 250 $\mu\mu\text{f}$, +14% —6%, 400 w-v d-c. Color coded: red, green, brown. $1\frac{1}{16}$ " long x $\frac{7}{16}$ " wide x $1\frac{1}{64}$ " thick.	Coupling V ₃ to V ₂ .	2 1468X	21B6613
C17			Capacitor Same as C6.	Screen grid by-pass, V ₃ .		
C18	#1	3D9050-35	Capacitor Fixed mica; 50 $\mu\mu\text{f}$, +14% —6%, 400 w-v d-c. Color coded: green, black, black. $1\frac{1}{16}$ " long x $\frac{7}{16}$ " wide x $1\frac{1}{64}$ " thick.	Grid leak by-pass, V ₃ .	2 1468X	21B6614
C19	#1	3D9100V-4	Capacitor Variable, air; 100 $\mu\mu\text{f}$ maximum, 5.0 $\mu\mu\text{f}$ minimum. Spring wiper of phosphor bronze, lug of copper, all other metal parts of brass. Rotor wiper lug on left hand side. Overall dimensions: $1\frac{7}{32}$ " long x $1\frac{5}{16}$ " wide x $1\frac{5}{8}$ " high.	Tuning L ₅ —Channel B.	1 Special	19K29861
C20	#1	3D9100V-5	Capacitor Variable, air; 100 $\mu\mu\text{f}$ maximum. Rotor wiper lug on right hand side. Base of grade G ceramic. All metal parts are brass except bronze spring wiper, and copper lugs. Spring wiper and lugs hot tinned. Overall dimensions: $1\frac{7}{32}$ " long x $1\frac{5}{16}$ " wide x $1\frac{47}{64}$ " high	Tuning L ₅ —Channel A.	1 Special	19K29860

C ₂₁	#1	3D9040-4	Capacitor Fixed, ceramic; 40 μf , $\pm .8$ (%). Negative temperature coefficient $-.00030 \mu\text{f}/\mu\text{f}/^{\circ}\text{C}$. overall dimensions: .460" long x .5" diameter. Tubular.	Padding, L ₅ .	21A35391
			or: Fixed, ceramic; tubular; 40 μf $\pm 2\%$. Temperature coefficient: $-.00030 \mu\text{f}/\mu\text{f}/^{\circ}\text{C}$. Overall dimensions: .625" long x .250" diameter; radial type leads. Inside and part of L ₅ .	24 L-40	21A36334
C ₂₂	#2	3D9250-25	Capacitor Fixed, mica; 250 μf , $\pm 5\%$, 300 w-v d-c. Color coded: red, green, brown. $1\frac{1}{16}$ " long x $\frac{7}{16}$ " wide x $1\frac{1}{64}$ " thick. Also C ₂₅ .	Coupling V ₄ to V ₃ .	21B6616
C ₂₃			Capacitor Same as C ₆ .	Microphone switch filter.	
C ₂₄			Capacitor Same as C ₆ .	Screen grid by-pass V ₄ .	
C ₂₅			Capacitor Same as C ₂₂ .	Blocking capacitor.	

#Available in Depot Stock.

33. TABULAR LIST OF REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
C26	#1		Capacitor Fixed, mica; 15 μ f, $\pm 5\%$, 300 w-v d-c. Color coded: brown, green, black.	Phase shifting, V4.	2 1469 10 5R 23	21B6633
C27	#2	3D9500-16	Capacitor Fixed, mica; 500 μ f, $\pm 14\%$ —6%, 400 w-v d-c. Color coded: green, black, brown. $\frac{7}{16}$ " long x $1\frac{1}{16}$ " wide x $1\frac{1}{4}$ " thick.	Discriminator load by-pass	2 1468X 10 5LL	21B6612
C28	#1	3DA130-1	Capacitor Fixed, paper; .13 μ f, $\pm 20\%$, 100 w-v d-c. Overall dimensions: $1\frac{15}{16}$ " long x $\frac{3}{16}$ " diameter. Shielded and oil filled, mounting bracket extruded and tapped 6-32 full thread.	Audio by-pass, T1.		8A31212
C29	#1		Capacitor Electrolytic; 25 μ f—10%+50%, 25 w-v d-c. $2\frac{1}{16}$ " long x $\frac{5}{8}$ " diameter; bracket of steel, tin finish.	Microphone current filter.	23 S-4707-E	23A34417
C30	#1	3D9050-36	Capacitor Fixed, mica; 50 μ f, $\pm 5\%$, 300 w-v d-c. Color coded: green, black, black, gold. $1\frac{1}{16}$ " long, $\frac{7}{16}$ " wide x $1\frac{1}{4}$ " thick.	Receiver antenna coupling.	2 1469	21B6617

C ₃₁	Capacitor Same as C ₆ .	Filament by-pass, V ₆ .
C ₃₂	Capacitor Same as C ₆ .	Screen grid by-pass, V ₆ .
C ₃₃	Capacitor Same as C ₉ .	Coupling V ₆ to V ₆ .
C ₃₄	Capacitor Same as C ₁₂ .	Tuning L ₆ —Channel B.
C ₃₅	Capacitor Same as C ₁₃ .	Tuning L ₆ —Channel A.
C ₃₆	Capacitor Same as C ₆ .	Filament by-pass, V ₆ .
C ₃₇	Capacitor Same as C ₆ .	B+ by-pass, V ₆ .
C ₃₈	Capacitor Same as C ₉ .	Coupling V ₆ to V ₇ .
C ₃₉	Capacitor Same as C ₁₂ .	Tuning L ₇ —Channel B.
C ₄₀	Capacitor Same as C ₁₃ .	Tuning L ₇ —Channel A.

33. TABULAR LIST of REPLACEABLE PARTS -a. RADIO RECEIVER & TRANSMITTER BG-659-(*) Cont.

Ref. No.	Quan. in Equip	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
C41			Capacitor Same as C9.	Crystal feedback coupling.		
C42	#1	3D9025-20	Capacitor Fixed, mica; 25 μ uf, $\pm 5\%$, 300 w-v d-c. Color coded: red, green, black, gold. $1\frac{1}{16}$ " long x $\frac{7}{16}$ " wide x $1\frac{1}{8}$ " thick.	Coupling V8 to L8.	2 1469	21B6618
C43			Capacitor Same as C6.	B+ by-pass, V8.		
C44			Capacitor Same as C12.	Tuning L8—Channel B.		
C45			Capacitor Same as C13	Tuning L8—Channel A.		
C46			Capacitor Same as C6.	Receiver oscillator metering lead by-pass.		
C47			Capacitor Same as C6.	Filament by-pass, V7.		
C48			Capacitor Same as C6.	Screen and anode grid by-pass, V7.		

C ₄₉		Capacitor Same as C ₆ .		Plate by-pass, V ₇ .		
C ₅₀	#1	3D9005-14	Capacitor Fixed, ceramic; 5 μf , $\pm 5\%$, 500 w-v d-c. Negative temperature coefficient $-.00010 \mu\text{f}/\mu\text{f}/^{\circ}\text{C}$. Color coded: red, black, green, black, green. .460" long x .25" diameter.	Padder, T ₂ primary.	7	21A35387
			or: Fixed, ceramic; 5 μf , $\pm 5\%$. Temperature coefficient: $-.00010 \mu\text{f}/\mu\text{f}/^{\circ}\text{C}$. .625" long x .187" diameter. Tubular; radial type leads. Inside and part of T ₂ .			
C ₅₁			Capacitor Same as C ₁₄ . Inside and part of T ₂ .	Padder, T ₂ primary.	24	21A36333
C ₅₂			Capacitor Same as C ₆ .	Filament by-pass, V ₉ .	R-5	
C ₅₃			Capacitor Same as C ₆ .	B+ by-pass, V ₉ .		
C ₅₄			Capacitor Same as C ₁₄ . Inside and part of T ₃ .	Padder, T ₃ primary.		
C ₅₅	#2	3D9025-21	Capacitor Fixed, ceramic; 5 μf , $\pm 1.5\%$, temperature coefficient $\pm .00003 \mu\text{f}/\mu\text{f}/^{\circ}\text{C}$. Color coded: red, red, green, black, green. .460" long x .25" diameter.	Padder, T ₃ secondary	7 D	21A35389

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
C ₅₆			or: Fixed, ceramic; 25 μmf , $\pm 5\%$, —.00010 $\mu\text{mf}/\mu\text{mf}/-$ °C, 500 w-v d-c. .625" long x .187" diameter. Part of T ₃ . Also C ₅₉ .	Filament by-pass, V ₁₀ .	24 F-25	21A36335
C ₅₇			Capacitor Same as C ₆ .	B+ by-pass, V ₁₀		
C ₅₈			Capacitor Same as C ₆ .	Padder, T ₄ primary.		
C ₅₉			Capacitor Same as C ₁₄ .	Padder, T ₄ secondary.		
C ₆₀	#1	3D9100-46	Capacitor Fixed, mica; 100 μmf , +14% —6% 400 w-v d-c Color coded: brown, black, brown. $\frac{7}{16}$ " wide x $1\frac{1}{16}$ " long x $1\frac{1}{64}$ " thick.	Bias resistor by-pass, V ₁₁ .	2 1468X	21B6620

C ₆₁	Capacitor Same as C ₆ .	Filament by-pass, V ₁₁ .		
C ₆₂	Capacitor Same as C ₆ .	Screen grid by-pass, V ₁₁ .		
C ₆₃	Capacitor Same as C ₆ .	Plate by-pass, V ₁₁ .		
C ₆₅	#2 Capacitor Variable, air; 29.0 μ f maximum, 6.0 μ f minimum, $\pm$ 7.0%. All metal parts brass except wiper spring of phosphor bronze. Base of isolantite Overall dimensions: 1 $\frac{3}{16}$ " long x 1 $\frac{3}{8}$ " wide x 2 $\frac{1}{8}$ " high. Inside and part of T ₆ . Also C ₆₆ .	Tuning, T ₅ primary.	28 2799	19B34815
C ₆₆	Capacitor Same as C ₆₅ . Inside and part of T ₅ .	Tuning, T ₅ secondary.		
C ₆₉	#1 Capacitor Fixed, ceramic; 50 μ f, $\pm$ 10%, 500 w-v d-c. Temperature coefficient: 0. Color coded: black, green, black, black, white. 1 $\frac{5}{32}$ " long x $\frac{5}{32}$ " diameter.	Coupling, T ₅ .	7 D	21A35392

Available in Depot Stock.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
			or:			
C69			Fixed, ceramic; 50 μ f, $\pm 10\%$, 500 w-v d-c. Temperature coefficient: 0. .750" long x .250" diameter. Inside and part of T s.	Control grid audio by-pass, V ₁₃ .	24	21A36337
			Capacitor Same as C ₆ .			
C70			Capacitor Same as C ₂₇ .	Pre-emphasis capacitor.		
			or:			
C71	2	3DA10-78	Capacitor Fixed, ceramic, .01 μ f, 500 w-v d-c. 1 $\frac{1}{16}$ " long x $\frac{5}{16}$ " diameter.	Audio coupling.		21A83389
			or:			
			Fixed, styramic paper; .01 μ f $\pm 20\%$, 300 w-v d-c. 1 $\frac{1}{16}$ " long x $\frac{5}{8}$ " wide x $\frac{1}{4}$ " thick.			8A38299
			or:			
			Fixed, molded paper; .01 μ f, $\pm 20\%$, 300 w-v d-c. Color coded: brown, black, orange, black. 1 $\frac{1}{16}$ " long x $\frac{5}{8}$ " wide x $\frac{1}{4}$ " thick.		1 Special	8A38382

C72		Also C72. Capacitor Same as C71.	Audio coupling to headphones.		
C73	1	Capacitor Fixed, bakelite; .005 μ f, $\pm 10\%$, 300 w-v d-c. $1\frac{1}{16}$ " long x $\frac{5}{8}$ " wide x $\frac{1}{4}$ " thick, axial leads. or: Fixed, mica; .005 μ f, $\pm 14\%$ -6%, 300 w-v. (Used in some sets.)	Audio by-pass.	1 Special	8A61328
C74	#1	Capacitor Fixed, ceramic; 34 μ f, $\pm 5\%$, 500 w-v d-c. Color coded: red, orange, yellow, black, green. .460" long x .225" diameter. or: Fixed, ceramic; 34 μ f, $\pm 5\%$, 500 w-v d-c. Color coded: green. Temperature coefficient: $\pm .00000$ U.00003. $\frac{7}{8}$ " long x $\frac{3}{16}$ " diameter; radial type leads. Inside and part of T5.	Audio by-pass. Padding, T5 primary	2 1467X	21B6610 21A40161
C75	#1	Capacitor Fixed, ceramic; 50 μ f, $\pm 5\%$. Negative temperature coefficient: .0001 μ f/ μ f/ $^{\circ}$ C. $\pm 15\%$. Color coded: red, green, black, black, green. .460" long x .225" diameter.	Padding, T5 secondary.	7 D	21A41622 21A31496

#Available in Depot Stock.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
			or: Fixed, ceramic; 50 μmf . $\pm 5\%$. Negative temperature coefficient: $\pm .0001 \mu\text{mf}/^\circ\text{C}$. Inside and part of T 5.		24 F-50	21A36332
CH ₁	#5	3C362-1	Choke, Low R-F Single layer solenoid; 45 turns No. 24 enameled wire. White wax dipped. Inductance—5.58 mh at 4 megacycles. Also CH ₄ , CH ₇ , CH ₉ , CH ₁₀ .	Plate V ₁ .	1 Special	24A31706
CH ₂	#4	3C362-1	Choke, R-F 3 pie; 185 turns No. 38 single celanese covered wire per pie. White wax dipped. Inductance—1.14 mh at 300 kilocycles. <i>All sets above Serial No. 2252 same as CH₆. CH₃, CH₅, CH₈ unchanged.</i> Also CH ₃ , CH ₅ , CH ₈ .	Plate, V ₂ .	1 Special	24A31705
CH ₃			Choke, R-F Same as CH ₂ .	Plate, V ₃ .		
CH ₄			Choke, Low R-F Same as CH ₁ .	Filament, V ₃ .		

CH ₅	Choke, R-F Same as CH ₂ .		Plate, V ₄ .		
CH ₆	3C362-2	Choke, R-F 2 pie; 81 turns No. 38 single celanese covered wire per pie. Wax dipped. Inductance—120 mh at 1000 cycles.	Plate, V ₅ .	1 Special	24A35663
CH ₇		Choke, Low R-F Same as CH ₁ .	Filament, V ₇		
CH ₈		Choke, R-F Same as CH ₂ .	Plate, V ₈ .		
CH ₉		Choke, Low R-F Same as CH ₁ .	Filament, V ₉ .		
CH ₁₀		Choke, Low R-F Same as CH ₁	Filament, V ₁₀ .		
F ₁	1	Fuse 1/4 ampere, 250 volt, glass encased.	Overload circuit breaker.	20 #1005	65X34860
J ₁	1	Jack, Microphone 3 contact, spring phosphor bronze, nickel silver finish. Brass mounting bushing, 3/8-32 thread, white nickel finish.	Microphone plug receptacle.	1 Special	40A30454
J ₂	1	Jack, Speaker and Phone Double pole, single throw. Mounted by brass bushing 3/8-32 thread. .276" long	Speaker phone jack.	1 Special	40A34857

#Available in Depot Stock.

23. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
L1	#1	3C1078	Coil, Antenna Loading Frequency range—27 mc to 38.9 mc. 7 turns No. 20 solid tinned bare copper wire, space wound on 1½" diameter ceramic coil form; coated with Q-Max (coil coating cement). Overall dimensions: 1¾" long, 1½" diameter.	Antenna loading.	1 Special	24B34808
L2	#1	3C1082	Coil, Power Amplifier Plate Frequency range—27 mc to 38.9 mc. 5 turns No. 18 solid tinned bare copper wire, space wound on 1½" diameter ceramic form, tapped at ¾ turn and at 2½ turns from terminal end; coated with Q-Max (coil coating cement). Overall dimensions: 2¾" long, 1½" diameter.	Plate, V ₁ .	1 Special	24B34809
L3	#1		Coil and Shield Power Amplifier Grid Frequency range—27 mc to 38.9 mc. 9 turns No. 18 solid tinned bare copper wire, space wound on ½" diameter bakelite coil form, tapped at 4½ turns, coated with Q-Max (coil coating cement). Overall dimensions, including aluminum shield: 2⅞" long, 1½" square.	Grid, V ₁	1 Special	24B34810

L 4	#1	2C5379()/C1	Coil and Shield, Buffer Grid Frequency range—13.5 mc. to 19.45 mc. 14½ turns No. 20 solid tinned bare copper wire, space wound on ¾" diameter bakelite coil form, tapped at 4½ turns; coated with Q-Max (coil coating cement). Overall dimensions, including aluminum shield: 2⅞" long, 1⅝" square.	Grid, V2.	1 Special	24B34813
L 5	#1	2C5379()/C2	Coil and Shield, Transmitter Oscillator Frequency range—6.75 mc. to 9.73 mc. 22¼ turns No. 22 solid tinned bare copper wire, space wound on ¾" diameter ceramic coil form, tapped at 3¾ turns and at 7 turns from terminal end, coated with Q-Max (coil coating cement). Overall dimensions including aluminum shield: 3⅜" long x 1⅝" square.	Grid, V3.	1 Special	24B34816
L 6	#1	2C5379()/C3	Coil and Shield, R-F Grid Frequency range—27 mc. to 38.9 mc. 6 turns No. 18 solid bare copper wire, space wound on ⅝" diameter bakelite coil form, coated with Q-Max (coil coating cement). Overall dimensions, including aluminum shield: 2⅞" long, 1⅝" square.	Grid, V6	1 Special	24B34818
L 7	#1	2C5379()/C5	Coil and Shield, Mixer Grid Frequency range—27 mc. to 38.9 mc. 8 turns No. 18 solid tinned bare copper wire, space wound on ⅝" diameter bakelite coil form, coated with Q-Max (coil coating cement). Overall dimensions, including aluminum shield: 2⅞" long, 1⅝" square.	Grid, V7 mixer.	1 Special	24B34820

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No	Contractor's Part Number
L 8	#1	2C5379()/C4	Coil and Shield, Receiver Oscillator Frequency range—26.7 mc. to 34.6 mc. 8 turns No. 18 solid tinned bare copper wire, space wound on $\frac{5}{8}$ " diameter x $2\frac{1}{4}$ " long bakelite coil form, coated with Q-Max (coil coating cement). Overall dimensions; including aluminum shield: $2\frac{7}{8}$ " long, $1\frac{5}{16}$ " square.	Grid, V ₇ oscillator.	1 Special	24B34822
M 1	#1	IS-1713F	Meter IS-171 0-8 ma. Luminous pointer and mark on dial. 3.2 ohms internal resistance.	Indicates: Receiver filament voltage; transmitter plate voltage for V ₁ and V ₂ ; and V ₁ grid and plate current.	1 Special	59B30011 or 59B38514
P 1	#1	2Z7229	Plug 5 pin (on internal battery box) plug. Pins are $\frac{5}{8}$ " long. Insulated base; $1\frac{1}{2}$ " x 1" wide x $\frac{1}{16}$ " thick.	Battery BA-41 contactor.	9 #M-50	28A30250
P 2	1	2Z7229-1	Plug 8 pin connector, consisting of plug, clamp, ring and back shield. Overall dimensions of complete assembly: $2\frac{3}{8}$ " long, $1\frac{15}{32}$ " diameter.	Power and control cable plug.	1	28A30437

R ₁	#1	3Z6270	Resistor Fixed, carbon; 2700 ohms, $\pm 10\%$, $\frac{1}{2}$ watt; insulated. $\frac{7}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter	Bias, V ₁	13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BT $\frac{1}{2}$ Ins.	6B5577
R ₂	#1	3Z6010-39	Resistor Fixed, carbon; 100 ohms, $\pm 5\%$, $\frac{1}{2}$ watt insulated. $\frac{7}{16}$ " long x .218" diameter.	Meter shunt	13 504 Ins. 29 MB $\frac{1}{2}$ Ins.	6B6408
R ₃	#2	3Z6005A6	Resistor Fixed, molded wire wound, 56 ohms $\pm 10\%$, $\frac{5}{8}$ " long x $\frac{3}{16}$ " diameter. or: Fixed, carbon; 56 ohms, $\pm 5\%$, $\frac{1}{2}$ watt insulated. $\frac{7}{16}$ " long x .218" diameter. Also R ₄₄ .	Filament equalizing, V ₂ .	16 BW $\frac{1}{2}$	17K34116
R ₄	#2	3Z6622-2	Resistor Fixed, carbon; 22,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{7}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter. Also R ₁₃ .	Bias, V ₂ .	13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BT $\frac{1}{2}$ Ins.	6B5614 6B6397

Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
R ₅	#5	3Z4534	Resistor Fixed, carbon; 1 megohm, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{1}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter.	Isolating, V ₂ grid metering lead.	13 504 Ins.	6B6046
			Also R ₆ , R ₂₃ , R ₃₃ , R ₃₆ , R ₃₉ , R ₄₂ .		29 MB $\frac{1}{2}$ Ins.	
					16	
					BT $\frac{1}{2}$ Ins.	
R ₆			Resistor Same as R ₅ .	Isolating, V ₃ grid metering lead.		
R ₇	#2	3Z6627-1	Resistor Fixed, carbon; 27,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{1}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter.	Bias, V ₃ .	13 504 Ins.	6B6434
					29 MB $\frac{1}{2}$ Ins.	
					16	
					BT $\frac{1}{2}$ Ins.	
R ₈	#3	3Z6100-9	Also R ₁₁ . Resistor Fixed, carbon; 1,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{1}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter.	B+ dropping, V ₄ .	13 504 Ins.	6B6229
			Also R ₂₀ , R ₂₂ .		29 MB $\frac{1}{2}$ Ins.	
					16	
					BT $\frac{1}{2}$ Ins.	

R ₁₀	1	3Z6010-10	Resistor Fixed, wire wound; 100 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{5}{8}$ " long x $\frac{3}{16}$ " diameter. (Replaced by R ₄₄ after serial No. 12446 on Order No. 8459-Phila-43.)	Oscillator modulator phase shift.	13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BT $\frac{1}{2}$ Ins.	6B6428
R ₁₁			Resistor Same as R ₇ .	Filament equalizing, V ₄ .	1	17K34117
R ₁₂	#5	3Z6747-10	Resistor Fixed, carbon; 470,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{7}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter. Inside and part of T ₂ .	Control grid coupling, V ₄ .	13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BT $\frac{1}{2}$ Ins.	6B6377
R ₁₃			Also R ₁₉ , R ₂₄ , R ₂₇ , R ₃₀ .	Voltage divider, T ₁ .		
R ₁₄	#2	3Z6020-7	Resistor Same as R ₄ .	Voltage divider, T ₁ .	16 BW $\frac{1}{2}$	17A31417
			Resistor Fixed, wire wound; 200 ohms, $\pm 5\%$, $\frac{1}{2}$ watt insulated. $\frac{5}{8}$ " long x $\frac{3}{16}$ " diameter.	Microphone voltage dropping.		

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
			or: Fixed, carbon; 200 ohms, $\pm 5\%$, $\frac{1}{2}$ watt insulated. $\frac{1}{16}$ " long x .218" diameter. Also R ₁₈ .		13 504 Ins. 29 MB $\frac{1}{2}$ Ins.	6B5613
R ₁₅	1	3Z5992-1	Resistor Fixed, wire wound; 2.2 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated; $\frac{5}{8}$ " long x $\frac{3}{16}$ " diameter. (Replaced by R ₄₃ after serial No. 12446 on Order No. 8459-Phila-43.)	Transmitter filament dropping.	1	17K34115
R ₁₆	#1	3Z5991-4	Resistor Fixed, wire-wound; 1 ohm, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{5}{8}$ " long x $\frac{3}{16}$ " diameter. or: Fixed, carbon; 1 ohm, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{1}{16}$ " long x .218" diameter.	Meter shunt.	16 BW $\frac{1}{2}$ Ins.	17K31449
R ₁₇	#1	3Z6620-11	Resistor Fixed, carbon; 20,000 ohms, $\pm 5\%$, 1 watt, insulated. $\frac{3}{4}$ " long x .281" diameter.	Meter multiplier	13 504 Ins. 518 Ins. 29 MB 1 Ins.	6B5616 6B5582

R ₁₈	Resistor Same as R ₁₄ .		Meter multiplier.	
R ₁₉	Resistor Same as R ₁₂ .		Control grid, V ₅ .	
R ₂₀	Resistor Same as R ₈ .		B+ decoupling V ₆ .	
R ₂₁	Resistor Fixed, carbon; 10,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{1}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter.	1 3Z6610-7	Plate load, V ₆ .	13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BT $\frac{1}{2}$ Ins. 6B6320
R ₂₂	Resistor Same as R ₈ .		B+ decoupling, V ₆ .	
R ₂₃	Resistor Same as R ₅ .		Isolating, V ₈ grid metering lead.	
R ₂₄	Resistor Same as R ₁₂ .		Bias, V ₈ .	
R ₂₅	Resistor Fixed, carbon; 270,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{1}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter. Also R ₃₇ , R ₃₈ .	#3 3Z6727	Mixer bias, V ₄ .	13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BT $\frac{1}{2}$ Ins. 6B6414

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS--a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
R 26	#1	3Z6615-1	Resistor Fixed, carbon; 15,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{7}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter.	Screen and anode grid dropping, V ₇ .	13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BT $\frac{1}{2}$ Ins.	6B6477
R 27			Resistor Same as R ₁₂ . Inside and part of T ₂ .	Loading, T ₂ primary.		
R 28	#4	3Z6082	Resistor Fixed, carbon; 850 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{7}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter. Also R ₂₉ , R ₃₂ , R ₃₅ .	B+ decoupling, V ₇ .	13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BT $\frac{1}{2}$ Ins.	6B6269
R 29			Resistor Same as R ₂₈ .	B+ decoupling, V ₉ .		6B6269
R 30			Resistor Same as R ₁₂ . Inside and part of T ₄ .	Loading, T ₄ primary.		

R ₃₁	#3	3Z4550	Resistor Fixed, carbon; 100,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{1}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter. Also R ₃₄ , R ₄₁ .	Bias, V ₁₁ .	13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BT $\frac{1}{2}$ Ins.	6B6031
R ₃₁			Resistor Same as R ₂₈ .	B+ decoupling, V ₁₀ .		
R ₄₃			Resistor Same as R ₅ .	Isolating, V ₁₁ grid metering lead.		
R ₃₄			Resistor Same as R ₃₁ .	Screen dropping, V ₁₁ .		
R ₃₅			Resistor Same as R ₂₈ .	B+ decoupling, V ₁₁ .		
R ₃₆			Resistor Same as R ₅ .	Isolating, V ₁₂ grid metering.		
R ₃₇			Resistor Same as R ₂₅ .	Discriminator load.		
R ₃₈			Resistor Same as R ₂₅ .	Discriminator load.		
R ₃₉			Resistor Same as R ₅ .	Grid, V ₁₃ .		

Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
R 40	#1		Potentiometer Variable, 1 megohm. Overall dimensions including switches: 1 3/4" long x 1 1/8" diameter. Mounting bushing 1/4" long, 3/8-32 thread. Part of SW 3, SW 4.	Volume control.	1	18B31441
R 41			Resistor Same as R 31.	Grid, V 14.		
R 42			Resistor Same as R 5.	Plate load, V 13.		
R 43	#1		Resistor Fixed, wire wound; 3.3 ohms, ± 10%, 1/2 watt insulated. 5/8" long x 3/16" diameter. or: Fixed, carbon; 3.3 ohms, ± 10%, 1/2 watt insulated. 7/16" long x .218" diameter. (Replaces R 15 after serial No. 12446 Order No 8459-Phila-43.)	Transmitter filament dropping.	16 BW 1/2 Ins.	17K47557
					13 504 Ins.	6B5680

R ₄₄	Resistor Same as R ₃ . (Replaces R ₁₀ after serial No. 12446 Order No. 8459-Phila-43.)	Filament equalizing.		
R ₄₅	#1 Resistor Fixed, molded wire wound; 220 ohms, $\pm 10\%$, $\frac{5}{8}$ " long x $\frac{3}{16}$ " diameter. or: Fixed, carbon; 220 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{1}{16}$ " long x .218" diameter, or $\frac{5}{8}$ " long x .187" diameter. (Added after serial No. 12446 Order No. 8459-Phila-43.)	Filament equalizing.	16 BW $\frac{1}{2}$ Ins. 13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BT $\frac{1}{2}$ Ins.	17K47552 6B6270
R ₄₆	#1 Resistor Fixed, carbon; 180 ohms, $\pm 10\%$, $\frac{1}{2}$ watt insulated. $\frac{1}{16}$ " long x .218" diameter. or: Fixed, wire wound; 180 ohms, $\pm 10\%$, $\frac{1}{2}$ watt. Molded case. $\frac{5}{8}$ " long x $\frac{3}{16}$ " diameter. (Added after serial No. 12446 Order No. 8459-Phila-43.)	Filament equalizing.	13 504 Ins. 29 MB $\frac{1}{2}$ Ins. 16 BW $\frac{1}{2}$ Ins.	17K47553 6B5660

Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
SW ₁	#1	3Z9859-17	Switch, Toggle Single pole, single throw (includes mounting nuts and indicator plates). Mounting bushing $1\frac{5}{8}$ " long, $1\frac{5}{8}$ "-32 thread. Rating: 3 amps. at 125 volts. Also SW ₂ .	Opens B+ lead to V ₁ and V ₂ .	1 Special	40A30035
SW ₂			Switch, Toggle Same as SW ₁ .	Alignment, V ₁ plate.		
SW ₃	#2	2Z7298-2	Switch Single pole, double throw switch. Overall dimensions including Potentiometer (R ₄₀): $1\frac{3}{4}$ " long x $1\frac{1}{8}$ " diameter. Mounting bushing $\frac{1}{4}$ " long, $\frac{3}{8}$ -32 thread. Part of R ₄₀ and SW ₄ .	Plate supply and receiver filament off-on.		18B31441
SW ₄			Switch Same as SW ₃ . Part of R ₄₀ .			
SW ₅	8	3Z8311-1	Switch, Channel Ganged; 4 sections, 2 positions; mounted by two studs on read end. Front end mounted by $\frac{3}{8}$ -32 thread stud. Overall dimensions: $9\frac{3}{8}$ " long x $1\frac{1}{8}$ " high x $1\frac{1}{2}$ " wide. Also SW ₆ , SW ₇ , SW ₈ , SW ₉ , SW ₁₀ , SW ₁₁ , SW ₁₂ .	Channel changing, V ₁ plate.	1 Special	40B34098

SW ₆	Switch, Channel Same as SW 5.	Channel changing, V ₁ grid.	
SW ₇	Switch, Channel Same as SW 5.	Channel changing, V ₂ grid.	
SW ₈	Switch, Channel Same as SW 5.	Channel changing, V ₃ grid.	
SW ₉	Switch, Channel Same as SW 5.	Channel changing, V ₆ grid.	
SW ₁₀	Switch, Channel Same as SW 5.	Channel changing, V ₇ grid.	
SW ₁₁	Switch, Channel Same as SW 5.	Channel changing, crystals.	
SW ₁₂	Switch, Channel Same as SW 5.	Channel changing, V ₇ oscillator.	
SW ₁₃	Switch, Meter 2 pole, 4 position. Spring brass contacts. Mount- ing bushing $\frac{1}{4}$ " long. $\frac{3}{8}$ -32 thread.	Meter function selector.	1 Special 40A30009
T ₁	Transformer, microphone Transformer, microphone C-66-A	Microphone input.	1 Special 25A30575 *5C-D-508-K

#Available in Depot Stock.

*Indicates Signal Corps Drawing Number.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
T ₂	#1	2Z9978-2	Transformer and Shield, 1st I-F Core: molded, iron core $1\frac{3}{8}$ " long x $\frac{1}{4}$ " diameter. Tuned with brass screw; 4-40 thread: $1\frac{3}{16}$ " long. Primary and secondary: Universal wound, four cross-overs per turn, with 52 turns of #7/44 Cel. E. Litz wire. Primary winding is $\frac{1}{2}$ " from bottom of form and Secondary winding is wound $\frac{1}{4}$ " above primary. The inductance of each winding is $33.0 \mu h$ at 1000 cy. Mutual inductance is .925 μh at 1000 cy. The Q of the coil is 105 at 4.3 mc. Includes C ₅₀ and R ₂₇ shunt across the primary and C ₅₁ shunt, across the secondary. Enclosed in an aluminum shield, $2\frac{3}{8}$ " high x $1\frac{1}{4}$ " square, mounted with 2 spade bolts.	Interstage coupling.	1 Special	24B34828
T ₃	#1	2Z9978-3	Transformer and Shield, 2nd I-F Same as T ₂ , except C ₅₄ is shunt across the primary and C ₅₅ is shunt across the secondary.	Interstage coupling.	1 Special	24B34849
T ₄	#1	2Z9978-4	Transformer and Shield, 3rd I-F Same as T ₂ , except C ₅₈ and R ₃₀ are shunts across the primary and C ₅₉ is shunt across the secondary.	Interstage coupling.	1 Special	24B34850

T ₅	#1	2Z9978-5	Transformer and Shield, Discriminator Core: ceramic, Grade G₁, $\frac{3}{8}$" outside diameter x $\frac{3}{4}$" long. 6-32 tap thread through center of dowel. Primary and secondary: Universal wound, four cross-overs per turn, with #10/44 S.S.E. Litz wire on separate forms. The inductance of each is 19 μh at 1000 cy.; inductance from center tap is 7.5 μh at 1000 cy. The Q of the coil is 110 at 4.3 mc. Includes C₆₈ between center taps, C₆₅ and C₇₄ are shunt across the primary; and C₆₆ and C₇₅ are shunt across the secondary. Enclosed in aluminum shield, 2$\frac{13}{16}$" high x 1$\frac{7}{8}$" long x 1$\frac{1}{16}$" wide, mounted with 2 spade bolts.	Interstage coupling.	1 Special	24B34837
T ₆	#1	2Z9978-6	Transformer, Output Core: #29 gauge, radio grade 6AAS iron, butt laminated (tight), $\frac{1}{2}$" stack, $\frac{1}{2}$" center leg. Primary: 2915 turns of #40 F.C. wire, insulated with .0005" glassine paper between layers. Terminals 1 and 2. Secondary: 59 turns of #23 E.C. wire, insulated with .004" polystyrene. Terminals 3 and 4. Transformer ratio 49.5 to 1. Enclosed in metal case, overall dimensions: 2$\frac{3}{8}$" long x 2" high x 1$\frac{13}{32}$" wide. Two $\frac{3}{8}$" diameter mounting holes, 2" centers.	Audio output	1 Special	25B34418
V ₁	2	2T182	Tube VT-182—Radio, Type 1291 Also V₂.	Transmitter, r-f power amplifier.	36	

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
V ₂			Tube VT-182—Same as V ₁ .	Transmitter buffer.		
V ₃	4	2T185	Tube VT-185—Radio, Type 1299. Also V ₄ , V ₈ , V ₁₄ .	Transmitter oscillator.	36	
V ₄			Tube VT-185—Same as V ₃ .	Transmitter reactance modulator.		
V ₅	5	2T179	Tube VT-179—Radio Type 1LN5. Also V ₆ , V ₉ , V ₁₀ , V ₁₁ .	Receiver r-f amplifier No. 2	36	
V ₆			Tube VT-179—Same as V ₅ .	Receiver r-f amplifier No. 2		
V ₇	1	2T178	Tube VT-178—Radio Type 1LC6.	Receiver mixer.		
V ₈			Tube VT-185—Same as V ₃ .	Receiver crystal oscillator.		
V ₉			Tube VT-179—Same as V ₅ .	Receiver i-f amplifier No. 1		
V ₁₀			Tube VT-179—Same as V ₅ .	Receiver i-f amplifier No. 2.		
V ₁₁			Tube VT-179—Same as V ₅ .	Receiver limiter.		
V ₁₂	1	2T183	Tube VT-183—Radio Type 1294	Receiver diode rectifier.		

V ₁₃	1	2T177	Tube VT-177—Radio Type 1LH4.	Receiver diode rectifier and d-c amplifier.		
V ₁₄			Tube VT-185—Same as V ₃ .	Power a-f power amplifier.		51X60375
101	1		Alignment Tool TL-207 Hexagonal wrench and blade for locking and unlocking trimmer nuts.	Trimmer alignment tool.	17	
102	1		Case CS-76- (*) Cotton webbing; corners and bottom leather reinforced; carrying strap 10" long, 7" high, 9" wide.	Case for RM-29- (*)	8 RN-29-1	51X34875
103	1		Case CS-79- (*) Cold rolled steel, painted olive drab. 14 7/8" long x 11 15/16" wide x 4 1/2" high. Cover hinged and fastened with 2 catch clips. 4 catch clips on side for fastening to receiver and transmitter case. Brackets and straps mounted inside for batteries and handset.	Battery case	1 Special	1X34700
104	2		Clamp MC-424 1 1/16" diameter x 1" long, with two filluster head machine screws #6-32x 1/2 and nuts. Screw is planed over to prevent loosening. Blue enamel finish.	Clamp to hold mast sections together.	1 Special	51X60371
105	1		Cover BG-108 Waterproof covering; overall dimensions; 14 1/8" x 14". Strap of cotton webbing, 5/8" wide x 15" long.	Mast section cover.	1 Special	51C34381

33. TABULAR LIST of REPLACEABLE PARTS— a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
106	1	2B613B 2B613C 2B613E	Handset TS-13- (*) Bakelite case; earphone and microphone encased in one housing. Switch at center for receiving and transmitting. Rubber Cord CD-494 terminates in Plug PL-65 and Plug PL-68.	Handset	5 21 3	51C35213 or 51K36424 or 51K36425
107	1	3G586A	Insulator IN-86- (*) Ceramic insulating material, with $\frac{1}{2}$ -20 tap; $\frac{5}{8}$ " deep in each end, with screw-eye, electro-zinc plated. 3" long x $1\frac{1}{4}$ " diameter or same as above except 2" long x $1\frac{1}{16}$ " diameter.	Insulator used to tie-down antenna	11 18	51X60373 or 51X60840
108	1	2A2088-48A	Mast Base MP-48- (*) $16\frac{1}{4}$ " long x $3\frac{1}{4}$ " outside diameter overall. Ceramic insulator; metal parts brass except spring of spring steel.	Antenna insulator	1 Special	51X60229
109	#2		Mast Section MS-51 Stainless steel; ferrules of admiralty brass. Tube soldered to ferrule for full depth of ferrule.	Antenna	1 Special	51K35209
110	2	2A2352	Mast Section MS-52 Brass, 3' $3\frac{1}{2}$ " long x $\frac{7}{16}$ " diameter. One end tapped with $\frac{1}{2}$ -13 thread, and the other end $\frac{1}{2}$ -13 threaded stud.	Antenna section	6 31	51K35210

111	#2	2A2353	Mast Section MS-53 Brass, 3' 3½" long x ½" diameter. One end tapped ½-13 thread and the other end ½-13 threaded stud.	Antenna section	6 31	51K352111
112	#1		Remote Control Unit RM-29-(*) Cold rolled steel, olive drab finish; 6½" wide, 6½" high, 9½" long. Two leads terminating in phone plug PL 55 and microphone plug PL 68.	Remote control and telephone communication	1 Special	51X34470
113	1		Strap ST-19-A Cotton webbing, olive drab; 2" wide, two iron swivel snaps at each end, brass bar buckle slide.	Carrying strap.	12 19	35C34161
114	2		Technical Manual TM-11-615 Covering Radio Sets SCR-609-A and SCR-610-A covering description, installation, operation, maintenance and replaceable parts.	For operating and maintenance personnel.	1 Special	54X60378
115	1		Wire W-29 (Antenna) 27 feet #14 single conductor automotive primary wire. ½" rubber coated lacquer insulated cotton braid. Yellow and red tracer.	Antenna	1 Special	30A35499
116	1	2Z8999	Assembly, Antenna Support Strap and Bracket Composed of 1½" wide, 3½" long bracket, stud spike, and 4¼" strap with binder plate and female snap.	Support for Antenna in carrying position.	1 Special	1X34878
117	1	2C5379A/A1	Assembly, Battery Box Metal battery box with 5 pin plug and leads.	Internal battery box and contact plug.	1 Special	1X34844

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659.(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
118	1	2C5379A/ A1/1	Assembly, Battery Box Cover and Spring. Composed of Battery box cover (149) and spring (200).	Internal battery box cover.	1 Special	1X31581
119	1	2Z1582	Assembly, Cable and Connector 8 Pin plug connector with cable clamp; 12" of 8 conductor rubber covered cable and mounting bushing.	Cable and connector to plate supply.	1 Special	1B34394
120	#1	2Z3405	Assembly, Cover and Gasket Rectangular metal cover with neoprene weather-proofing gasket, 3"x1 $\frac{3}{16}$ ".	Antenna tuning adjustment cover.	1 Special	1X34239
121	1	2Z2644	Assembly, Crystal Clamp and Bracket Crystal clamp mounted on U-shaped bracket.	Holds crystal in position.	1 Special	1X30893
122	#2	2Z3403.10	Assembly, Jack Waterseal Assembly consists of cup and bracket, bushing, spring, lid, pin, jack waterseal plunger and plunger retainer spring. All metal parts black nickel plated; plunger is black bakelite.	Jack cover and seal	1 Special	1X41849
123	1	3H4600- 117C, R2	Assembly, Retainer Bracket (Long) 3 $\frac{1}{2}$ " high, "L" shaped on one end, other has bracket with 2 felt pads $\frac{1}{4}$ " thick, $\frac{3}{4}$ " square.	Hold plug in capacitor and VT-184 in place	1 Special	1X31358

124	1	3H4600-117C/R3	Assembly, Retainer Bracket (Short) 2½" high, "L" shaped on one end, other end has bracket with two felt pads, ¼" thick, ¾" square.	Holds vibrator and VT-195 in place.	1 Special	1X31359
125	1	2Z8868	Assembly, Spring and Bracket (Left Hand) Spring bracket and chassis hold-down spring; riveted together.	Rear left-hand chassis hold-down (on housing).	1 Special	1X34876
126	1	2Z8868-1	Assembly, Spring and Bracket (Right Hand) Spring bracket and chassis hold-down spring riveted together.	Rear right-hand chassis	1 Special	1X34640
127	1	2Z8868-3	Assembly, Spring and Bracket (Left Hand) Spring bracket and chassis hold-down spring riveted together.	Chassis retainer	1 Special	1X31056
128	1		Assembly, Terminal Strip Phenolic strip; 11⅞" long, 1¼" wide, ⅛" thick; 40 Cinch #1436-A lugs; 2 Shakeproof #2104-4 lugs; 6 holes .136" diameter; 3 mounting brackets.	Tie point.	1 Special	1X35926
129	1	2Z734	Block, Antenna Mounting Metal block; 1⅞" high, ¾" wide, ⅞" deep; ⅜-16 thread, ¾" long stud.	Antenna mounting.	1 Special	46A34088
130	1		Body, Battery Box Cold rolled steel, white cadmium or nickel plated; .024" thick, 3" high, 2⅞" wide, 3.75" long.	Battery box for Battery BA-41.	1 Special	15B35278

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS--a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
131	1		Block, Antenna Mounting Brass, white nickel finish; 1.125" long, .750" wide, .8750" thick; 1 hole tapped 3/8-16 thread, 2 holes not tapped, 2 holes tapped 6-32 thread 1 hole tapped 1/4-20 thread.	Antenna mounting	1 Special	46A36552
132	1	2A245A/B2	Box, Antenna Junction Cold rolled steel olive drab finish; 2 3/8" high, 2 1/8" wide, 1 5/16" deep.	Antenna mounting block protector.	1 Special	15B35285
133	1		Bracket Cold rolled steel, white nickel plated; .048" thick, 2 7/8" long, 5/16" base, 1" wide, L shaped; two holes, .136" diameter.	Band switch	1 Special	7K35271
134	1		Bracket Cold rolled steel, white nickel plated; .048" thick, 2 3/4" long, 5/16" base, 1" wide, L shaped; one hole .390" diameter, two holes .136" diameter and 1 hole .144" diameter.	Band switch.	1 Special	7B35270
135	1	2Z1239	Bracket, Adjustment Stop Cold rolled steel, olive drab finish; L shaped; .062" thick, 2 1/4" long, 3/4" wide, slotted base 7/8" long.	Prevents antenna from sliding when in carrying position	1 Special	7A34351

136	1	Bracket, Spring (Right-Hand) Cold rolled steel, white nickel plated; .060" thick, 1" wide, 2 1/8" long, L shaped.	Chassis hold-down	1 Special	7K35281
137	1	Plate, Metering Indicator Vinylite, white opaque; overall dimensions, 1 3/8" wide, 2" long, .025" thick; two holes .128" diameter.	Metering indicator plate	1 Special	13B35652
138	1	Bushing, Antenna Brass; nickel plated; 3/8-16 thread tapped, 1" diameter collar on each end, 1 collar knurled.	Antenna mounting; wire antenna or lead-in clamping nut.	1 Special	43A34076
139	3	Bushing, Cable Clamp Aluminum; painted olive drab. 3/4-20 thread x 1/2" long.	Cable clamp bushing	1 Special	43K41211 or 43A30452
140	3	Bushing, Control Shaft 3/16-28 outside thread; 3/16-20 insidet apped. Brass, white nickel plated.	Meter, channel, and volume control shaft bushings.	1 Special	43A30242
141	4	Bushing Brass, white nickel plated; .2517" square at head, .0954" thick at head, .1680" square body, .093" long; tapped 4-40 thread.	Battery box	1 Special	43A30456
142	6	Catch Clip Steel; 25/16" long; smooth olive drab finish.	Part of Catch Clip assembly for holding Units.	1 Special	55B31520

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—**a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.**

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
143	1		Chassis Base Cold rolled steel, white nickel finish; waxed; punched for parts mounting. Overall dimensions: 13 $\frac{25}{32}$ " long, 10 $\frac{11}{16}$ " wide, 2 $\frac{9}{32}$ " high.	Radio Receiver and Transmitter BC-659-(*) Chassis base.	1 Special	27D34110
144	1		Clamp, Cable Yoke Aluminum, oval shaped. $\frac{7}{8}$ " long x $\frac{1}{2}$ " wide x $\frac{1}{4}$ " thick.	Cable clamp yoke.	1 Special	42A31181 or 42K36504
145	1		Clip, Fuse Phosphor bronze, white nickel plated; U-shaped, $\frac{7}{16}$ " high x $\frac{5}{16}$ " wide x $\frac{11}{32}$ " long. .135"- .138" diameter hole in bottom for mounting.	Fuse clip.	20 1101	42A31278
146	6	2Z2728	Clip, Loop Retainer Spring steel; $\frac{5}{8}$ " wide, 2 $\frac{3}{8}$ " long; 1 $\frac{1}{8}$ " loop on one end; olive drab finish.	Holds catch clip loop when it is not in use.	1 Special	42A31561
147	1	2Z3293	Coupling, Molding, and Inserts Bakelite; 1 $\frac{1}{8}$ " long, $\frac{3}{4}$ " diameter, metal inserts for $\frac{1}{4}$ " shafts; 4 holes tapped 8-32 thread for set screws.	Couples knob shaft to channel switch shaft.	1 Special	67A30449
148	1		Cover Armite, wax impregnated; 1 $\frac{3}{4}$ " long, $\frac{1}{2}$ " wide, .023" thick, hook shaped.	Meter terminal cover.	1 Special	14A31731

149	1	Cover, Battery Cold rolled steel, L-shaped; .024" thick, 2.452" wide, 3 $\frac{1}{4}$ " high, 3" long at base, sides flanged; white nickel plated, wax dipped.	Cover for Battery BA-41.	1 Special	15B35276
150	1	Cover, Capacitor Tuning Cold rolled steel; .036" thick, 3" long, 1 $\frac{1}{4}$ " wide; olive drab finish.	Capacitor tuning cover.	1 Special	15A35251
151	1	Cover, Chassis Cold rolled steel, white nickel plated, wax dipped; 11 $\frac{1}{16}$ " long, 6" wide, 4 $\frac{1}{8}$ " high.	Cover for chassis.	1 Special	15C30932
152	1	Cover, Desiccator Cold rolled steel; .024" thick, 13.437" long, 8.937" wide, 1 $\frac{1}{4}$ " wide flanged edges, white nickel plated, wax dipped.	Remove moisture	1 Special	15K34715
153	2	Cover, Jack Neoprene black; 1" outside diameter, 1 $\frac{5}{8}$ " long, $\frac{3}{16}$ " thick wall, $\frac{3}{8}$ " diameter hole in top, $\frac{3}{8}$ " opening at bottom.	Weather-proofing cover for phone and microphone jacks.	1 Special	37A34143
154	1	Coupling and Inserts Molded phenolic, with metal inserts, for $\frac{1}{4}$ " shaft. Four 8-3 thread tapped holes for set screws.	Couples knob shaft to channel switch shaft.	1 Special	67A30449
155	#12	Cupwasher Brass, $\frac{1}{8}$ " outside diameter x .195" inside diameter. Black nickel finish.	Catch clip mounting.	1 Special	4K47676

#Available in Depot Stock.

33. TABULAR LIST OF REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
156	6		Cupwasher Brass, white nickel plated; $\frac{1}{2}$ " outside diameter, .171" diameter hole, edges .025" high.	General, for #8 screw.	1 Special	4K60202
157	#4		Cupwasher Brass, white nickel plated; $\frac{7}{16}$ " outside diameter, .171" hole, edges .025" high.	General, for #8 screws.	1 Special	4K60204
158	#18		Cupwasher Brass; $\frac{7}{16}$ " outside diameter x .144" inside diameter. Black nickel finish.	General.	1 Special	4A47674
159	3		Cushion Sponge rubber; $3\frac{3}{16}$ " long, $2\frac{5}{16}$ " wide, $\frac{1}{4}$ " thick; 3 holes $\frac{5}{32}$ " diameter	Battery box cushion.	1 Special	37A30113
160	1	6G251	Desiccator Silica jell moisture absorbing compound enclosed in a spun glass bag.	To absorb any moisture which may collect inside radio set.	1 Special	1K31011
161	1	2C5379A/E1	Escutcheon, Front Panel Etched aluminum, black paint filled; $1\frac{3}{4}$ " wide x $4\frac{3}{8}$ " long.	Control knob escutcheon plate.	1 Special	13B35662
162	1		Escutcheon, Volume and Switch Vinylite, white; .025" thick, $4\frac{1}{2}$ " long, $1\frac{3}{4}$ " wide.	Volume and switch control escutcheon.	1 Special	13B35662

163	1	Gasket Neoprene, black; $3\frac{1}{8}$ " square, $\frac{1}{16}$ " thick, $2\frac{5}{8}$ " diameter hole; 4 holes .156" diameter for mounting.	Speaker gasket.	1 Special	32A34350
164	6	Gasket Neoprene, $1\frac{1}{8}$ " long, $\frac{19}{32}$ " wide, $\frac{1}{16}$ " thick; 2 holes $\frac{5}{32}$ " diameter.	Catch clip gasket.	1 Special	32A49769
165	1	Gasket, Block Insulator Neoprene; $2\frac{3}{4}$ " x $2\frac{1}{2}$ " outside dimensions, $1\frac{3}{4}$ " x $1\frac{1}{2}$ " inside dimensions.	Antenna block insulator weather-proofing seal.	1 Special	37A30028
166	1	Gasket, Front Panel Neoprene; $6\frac{3}{4}$ " wide, $11\frac{1}{8}$ " long.	Weather-proofing seal between front panel and housing.	1 Special	37A30175
167	#2	Gasket, Jack Waterseal Black synthetic rubber. $\frac{9}{16}$ " diameter x $1\frac{1}{4}$ " high x $1\frac{1}{8}$ " hole in center. Has groove on outside for gasket retainer spring.	Jack waterseal.	1 Special	32A41934
168	1	Gasket, Cable Clamp Vellutex material; $\frac{3}{4}$ " inside diameter x $3\frac{1}{2}$ " outside diameter x $\frac{1}{2}$ " thick.	Cable clamp gasket.	1 Special	37A60067
169	1	Gasket, Meter Neoprene, .125" thick, $2\frac{3}{16}$ " inside diameter, $2\frac{1}{16}$ " outside diameter.	Meter gasket.	1 Special	32A38303

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
170	1		Gasket, Meter Neoprene, $\frac{3}{16}$ " thick, $2\frac{3}{16}$ " inside diameter, $2\frac{3}{4}$ " outside diameter.	Meter gasket.	1 Special	32A49767
171	1	2C5379A, G2	Gasket, Meter Neoprene; $2\frac{1}{16}$ " outside diameter, $2\frac{1}{16}$ " inside diameter.	Weather-proofing seal between meter and panel.	1 Special	37A30029
172	1		Gasket, Panel Neoprene, black; $\frac{9}{32}$ " thick square, $11\frac{21}{32}$ " long, $6\frac{13}{32}$ " wide.	Panel water-proof seal.	1 Special	32B49774
173	2		Gasket, Rail Neoprene, black; $11\frac{1}{2}$ " long, $1\frac{1}{16}$ " wide, $\frac{1}{16}$ " thick; 4 holes .125" diameter.	Chassis insulator.	1 Special	32A49770
174	1	2C5379A/G3	Gasket, Screw Neoprene; $1\frac{1}{64}$ " long, $\frac{1}{32}$ " outside diameter, .125" inside diameter.	Weather-proofing seal for antenna tuning adjustment.	1 Special	37A31551
175	3	2C5379A/G4	Gasket, Shaft Bushing Vellutex; $\frac{3}{4}$ " outside diameter, $\frac{9}{16}$ " inside diameter.	Weather-proofing seal between front panel and speaker.	1 Special	37K30068

176	1	2G5379A/G5	Gasket, Speaker Neoprene; $3\frac{1}{8}$ " square, $2\frac{5}{8}$ " diameter hole in center.	Weather-proofing seal between front panel and speaker.	1 Special	32A34350
177	2		Grommet Fibre, black; $\frac{3}{8}$ " outside diameter, $\frac{5}{16}$ " inside diameter, $\frac{13}{64}$ " thick.	Wire lead protector.	1 Special	14A443
178	1	2Z4922-1	Handle Leather handle, complete with mounting screws.	Carrying handle.	1 Special	55B30177
179	1		Housing $14\frac{11}{16}$ " long, $11\frac{15}{16}$ " wide, $6\frac{3}{4}$ " high, cold rolled steel, olive drab wrinkle finish.	Housing for Radio Receiver and Transmitter BC-659-(*).	1 Special	15D49790
180	1	3G1100-43	Insulator, Antenna Mounting Block XXX phenolic plate; $2\frac{1}{16}$ " long, $2\frac{7}{16}$ " wide.	Antenna mounting block insulator.	1 Special	14A30005
181	#3	2Z5829	Knob, Control Zinc alloy; $1\frac{13}{32}$ " long, .144" hole for mounting. Smooth olive drab finish.	Control knob.	1 Special	36A30265
182	6	6L3408-32K	Nut, Knurled Brass, nickel plated; $\frac{3}{8}$ " round knurled edge 8-32 thread tapped.	Mounts chassis pack cover.	1 Special	2A31225
183	2	6L3820	Nut, Wing Brass or steel, white nickel plated. $\frac{7}{16}$ " high, $2\frac{7}{32}$ " long, 8-32 thread tapped.	Holds retainer bracket in position	1 Special	2A30931

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
184	3	6L3509-28	Nut, Shaft Bushing $\frac{5}{16}$ -28 thread, $\frac{3}{4}$ " hexagonal. Brass, white nickel plated.	Nut for panel control shaft bushing.	1 Special	2A31012
185	1		Panel, Front Cold rolled steel, olive drab finish; 12" long, $6\frac{7}{8}$ " wide, $\frac{9}{16}$ " deep, .042" thick.	Front panel.	1 Special	64C49780
186	6		Plate Cold rolled steel, olive drab finish; .050" thick, $1\frac{3}{16}$ " wide, $1\frac{3}{8}$ " long, center raised, four .156" diameter holes for mounting.	Handle ring retainer.	1 Special	55A30070
187	2		Pin, Antenna Post Cold rolled steel, white nickel plated; head: .250" long, .1502" diameter; stud: knurled, .281" long, .1192" diameter.	Antenna block guide	1 Special	47A36554
188	1		Plate, R-F Shield Cold rolled steel, white nickel plated; $11\frac{11}{16}$ " long, 2" wide, .024" thick; brass mounting brackets: L-shaped, $\frac{1}{2}$ " high, $\frac{1}{4}$ " wide, $\frac{1}{4}$ " leg, $\frac{1}{16}$ " thick.	R.F. Shield	1 Special	1X34858

#Available in Depot Stock.

189	1	2Z7229-1	Plug, Connector 8 pin connector, consisting of plug, clamp ring and back shield; Overall dimensions: $2\frac{3}{8}$ " long, $1\frac{1}{2}$ " diameter.	Cable connector plug.	1 Special	28A30437
190	1	2C5379A/P1	Post, Antenna Contactor Mounting XXX phenolic; $\frac{1}{2}$ " diameter, 1" long. 8-32 tapped hole in both ends.	Antenna wiper insulated mounting.	1 Special	46A30034
191	2	2C5379-A/R1	Rail, Chassis Insulating Molded phenolic L-shaped rail, with 4 brass mounting inserts.	Chassis guide and insulator.	1 Special	14B30176
192	1		Ring Cold rolled steel, white cadmium finish, $2\frac{1}{16}$ " outside diameter, 2.093" inside diameter, .059" thick.	Reinforce meter.	1 Special	42A49810 or 42A49763
193	6		Ring, Handle Cold rolled steel, olive drab finish; .203" diameter rod, $1\frac{1}{2}$ " high, $1\frac{1}{16}$ " wide.	Handle ring.	1 Special	55A30069
194	#1	6L4904-10.20	Screw, Cap Cold rolled steel, white nickel plated; $\frac{1}{4}$ -20 thread, $\frac{5}{8}$ " long, hexagonal head.	Antenna block mounting screw and wiper contact.	1 Special	3A30459
195	3	6L7936	Screw, Control Shaft Packing $\frac{7}{16}$ -20 thread, .265" inside diameter. Brass, slotted, white nickel plated.	Holds control shaft weather-proofing packing in bushing.	1 Special	3A30241

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
196	1		Shield, Tube Cold rolled steel, white nickel plated; $2\frac{5}{8}$ " high x $1\frac{1}{4}$ " inside diameter.	Tube shield.	15 G-1330	26A35591
197	1	2C5379A/S3	Shaft, Channel Switch Knob Cold rolled steel, white nickel plated; 1.5608" long, .2502" diameter, end tapped 6-30 thread $\frac{3}{8}$ " deep.	Channel switch knob shaft.	1 Special	47A34083
198	#1	2Z8657.3	Socket Octal molded, saddle type. Body of mica filled tan phenolic; 1.046" diameter. Mounting of .020" rolled steel, hot tin plated, 1.312" between mounting holes.	Metering Socket.	4 88-8TM	9A6799
199	#14	2Z837.3	Socket, Tube Molded octal, saddle type. Body of molded mica filled phenolic, 1" diameter. Mounting plates of cold rolled steel, hot tin plated. 1.31" between mounting holes.	Tube socket.	9 6953	9A30730
200	1		Spring Phosphor bronze, white nickel plated; semi-circle shaped; overall dimensions: .020" thick, $\frac{3}{4}$ " wide $2\frac{1}{2}$ " long, two holes .128" diameter at center.	Battery retainer.	1 Special	41A31572

201	#2	2Z8877-8	Spring, Gasket Retainer .043" diameter, stainless steel wire formed into $\frac{3}{4}$ " diameter circle with small loops (finger grips) formed on each end.	Fastens jack gasket.	1 Special	41A41932
202	1	2Z9049	Strap, Antenna Thread Protector Cold rolled steel, U-shaped, .062" thick, $\frac{1}{2}$ " wide, 1" high, $1\frac{1}{8}$ " between mounting holes, $\frac{1}{2}$ " wide loop.	Protects threaded antenna stud when antenna is in carrying position.	1 Special	42A34359
203	#2	2Z9477-2	Strip, Terminal One insulated lug and one mounting lug, mounted on, $\frac{25}{32}$ " long x $\frac{3}{8}$ " wide bakelite strip.	Tie point.	1 Special	31A31217
204	1	2Z8678	Socket, Crystal Mica filled bakelite. $\frac{3}{4}$ " square x $\frac{1}{2}$ " high. beryllium copper contacts, silver plated. .140" diameter center hole for mounting.	2 crystal receptacle.	1 Special	9A30451
205	1		Spring, Chassis Hold-Down Phosphor bronze, white nickel finish; .050" thick, 3" long, $\frac{1}{2}$ " wide; hook on end; 2 holes .1925" diameter for mounting.	Chassis hold-down spring.	1 Special	41B30110
206	1	2Z9477-3	Terminal Strip Bakelite; $1\frac{1}{8}$ " long, $\frac{3}{8}$ " wide, $\frac{1}{16}$ " thick. 2 Cinch #X-1464 lugs, 1 Cinch #2494 lugs.	Tie point.	1 Special	31A34326
207	1	2Z9477	Terminal Strip Bakelite; $1\frac{17}{32}$ " long, $\frac{3}{8}$ " wide, $\frac{1}{16}$ " thick. 3 lugs, Cinch #X-1464; 1 lug, Cinch #1465.	Tie point.	1 Special	31A34771

#Available in Depot Stock.

33. TABULAR LIST OF REPLACEABLE PARTS—a. RADIO RECEIVER & TRANSMITTER BC-659-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
208	1	2Z9477-1	Terminal Strip Bakelite; $1\frac{5}{32}$ " long, $\frac{3}{8}$ " wide, $\frac{1}{16}$ " thick; 3 lugs, Cinch #X-1464; 1 lug, Cinch #1465.	Tie point.	1 Special	31A34770
209	1	Z11118	Tubing and Clamp Brass tubing, white nickel finish; $1\frac{1}{8}$ " outside diameter, .085" inside diameter, $5\frac{1}{8}$ " long; 2 solder lugs for mounting.	Shield, V ₇ mixer plate lead.	1 Special	43A34368
210	#18		Washer Brass; .365" outside diameter x .144" inside diameter x .005" thick.	General	1 Special	4A47681
211	6		Washer Brass; .005" thick, .427" outside diameter, .171" diameter hole.	General for #8 screw.	1 Special	4K60198
212	#4		Washer Brass; .365" outside diameter, .171" inside diameter, .005" thick.	General for #8 screw.	1 Special	4K60199
213	10		Washer Neoprene; $\frac{7}{16}$ " outside diameter, $\frac{5}{32}$ " inside diameter, .032" thick.	Waterseal.	1 Special	4K60206

214	12		Washer .427" outside diameter, .195" inside diameter, .005" thick. Brass.	Catch clip mounting.	1 Special	4K47682
215	1	205379A/W1	Washer, Antenna Bracket Weather-proofing Neoprene; .062" thick, $\frac{3}{8}$ " outside diameter, $\frac{1}{8}$ " hole.	Weather-proof seal for antenna support strap and bracket mounting holes.	1 Special	4A34460
216	1	2C5379A/W2	Washer, Insulating Fibre; $\frac{3}{4}$ " outside diameter, .390" inside diameter.	Jack insulating.	1 Special	14A35250
217	3	6L73400	Washer, Packing Neoprene; .250" inside diameter; .375" outside diameter.	Weather-proofing packing in control shaft bushing.	1 Special	37A30108
218	#18		Washer, Waterseal Black synthetic rubber; $\frac{5}{16}$ " outside diameter x $\frac{1}{8}$ " inside diameter x $\frac{1}{32}$ " thick.	General	1 Special	4K41624
219	#2	6L54012	Washer, Waterseal $\frac{3}{4}$ " outside diameter x $\frac{23}{64}$ " inside diameter x $\frac{1}{32}$ " thick. Black synthetic rubber.	Waterseal for jack.	1 Special	4K41623
220	#12		Washer, Waterseal Black synthetic rubber; $\frac{13}{32}$ " outside diameter x $\frac{1}{32}$ " thick.	Catch clip waterseal.	1 Special	4K41628
221	1	2A245A/W1	Wiper, Antenna Phosphor bronze; .025" thick, $\frac{3}{8}$ " wide. .187" mounting hole at one end.	Antenna contactor.	1 Special	39A30010

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—b. PLATE SUPPLY UNIT PE-117-(*)

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
C ₁	#1	3DA500-59	Capacitor Fixed, paper; .5 μ f, +14% -6%, 200 w-v d-c. Shielded and oil filled. Mounted by two lugs. 2.125" centers with .187" diameter holes.	Vibrator By-pass.	1 Special	8A31232
C ₂	#8		Capacitor Fixed, ceramic, .005 μ f, +80% -20%, 300 w-v d-c. 1 1/16" long x 5/16" diameter. or: Fixed, paper; .005 μ f, +80% -20%. 300 w-v d-c. 1 1/16" long x 5/8" wide x 3/32" thick. or: Fixed, molded paper; .005 μ f, +80% -20%, 300 w-v d-c. Color coded: Green, black, red, orange. 7/8" x 9/16" wide. or:	By-pass.	1 Special	21A38631
					1 Special	8A38632
					23 339	8A41614

C ₃	3DA5-24	Fixed, molded paper; 5,000 μ f, +80% -20%, 300 w-v d-c. Color coded: Green, black, red, orange, black. 1 $\frac{1}{32}$ " long x $\frac{5}{8}$ " wide x $\frac{1}{4}$ " thick.	1 Special	8K41615
		or:		
		Fixed, mica; .01 μ f, +14%, -6%, 300 w-v d-c. (Used in some sets.)		
		Also C ₃ , C ₄ , C ₅ , C ₆ , C ₇ , C ₈ , C ₁₂ .		
C ₄	3DA5-24	Capacitor—Same as C ₂ .	2 1467X	21B6609
		Capacitor—Same as C ₂ .		
		Capacitor—Same as C ₂ .		
		Capacitor—Same as C ₂ .		
C ₅	3DA5-24	or:	2 1467X	21B6610
		Fixed, mica; .005 μ f, +14%, -6%, 300 w-v d-c. (Used in some sets).		
		Capacitor—Same as C ₂ .		
		or:		
C ₆	3DA5-24	Fixed, mica; .005 μ f, +14%, -6%, 300 w-v d-c. (Used in some sets).	2 1467X	21B6610
		Capacitor—Same as C ₂ .		
		or:		
		Fixed, mica; .005 μ f, +14%, -6%, 300 w-v d-c. (Used in some sets).		
C ₇	3DA5-24	By-pass.	2 1467X	21B6610
		By-pass.		
		By-pass.		
		By-pass.		

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—b. PLATE SUPPLY UNIT PE-117-(*)—Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
C ₈			Capacitor—Same as C ₂ .	By-pass.		
C ₉	#1		Capacitor Electrolytic; 1000 μ f, +150%—10%, 15 w-v d-c. Overall dimensions including terminals; $2\frac{11}{32}$ " long x $1\frac{3}{8}$ " diameter.	Filament filter.	1 Special	23B31235
C ₁₀	#1	3D403-()	Capacitor CA-403-(*) Electrolytic; 20/20 μ f, +150%—10%, 400 w-v d-c. $2\frac{1}{2}$ " long x $1\frac{15}{32}$ " diameter, metal encased.	B+ Filter.	1 Special	23B31236
C ₁₁	#1	3DA20-18	Capacitor Fixed, paper; .02 μ f, +14%—6%, 1600 w-v d-c. Shielded, and oil filled. $11\frac{9}{32}$ " long x $2\frac{5}{32}$ " wide. Mounting lugs attached, 1.875" centers with .156" diameter holes.	Buffer, T ₁ secondary.	1 Special	8A31227
C ₁₂			Capacitor—Same as C ₂ .	By-pass.		
R ₁	#2	2Z6020-20	Resistor Fixed, carbon; 200 ohms, $\pm$ 10%, 1 watt, not insulated. 1" long x .187" diameter. Also R ₂ .	Buffer, T ₁ primary.	32 766-A	6B6315

R ₂			Resistor—Same as R ₁ .	Buffer, T ₁ .		
R ₃	#1	3Z6002-12	Resistor Fixed, molded, wire-wound; 20 ohms, $\pm 10\%$; 1 watt, $1\frac{1}{4}$ " long x $\frac{1}{4}$ " diameter. or: Fixed, carbon; 20 ohms, $\pm 10\%$, 1 watt, insulated. $\frac{3}{4}$ " long x .281" diameter.	Vibrator regulating, V ₁ .	16 BW-1	17A31422
R ₄	#1	3Z5984	Resistor Fixed, wire-wound, .4 ohms, $\pm 5\%$, 5 watt insulated. $1\frac{1}{32}$ " long x $1\frac{15}{32}$ " diameter.	Transformer regulating T ₁ .	33 Koolohm	17A31431
R ₅	#1	3Z5997	Resistor Fixed, wire-wound; 7.5 ohms, $\pm 5\%$, 10 watt insulated. Axial leads; $1\frac{27}{32}$ " long x $1\frac{15}{32}$ " diameter.	Filament dropping (receiver).	33 Koolohm	17A34894
R ₆	#1		Resistor Fixed, wire-wound; 2.5 ohms, $\pm 5\%$, 10 watts insulated, axial leads; $1\frac{27}{32}$ " long x $1\frac{15}{32}$ " diameter. (Replaced by R ₁₀ after serial No. 12395, Order No. 8459-Phila-43).	Filament dropping (transmitter).	33 Koolohm	17K47607
R ₇	#1	3Z6100-44	Resistor Fixed, wire-wound; 1000 ohms, $\pm 5\%$, 10 watts insulated; axial leads; $1\frac{27}{32}$ " long x $1\frac{15}{32}$ " diameter.	Regulating bleeder.	33 Koolohm	17K34895

Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—b. PLATE SUPPLY UNIT PE-117-(*)—Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
R ₈	#1		Resistor Fixed, wire-wound; 3 ohms, $\pm 5\%$, 5 watts, insulated; axial leads; $1\frac{1}{32}$ " long x $\frac{1}{16}$ " diameter.	B+ dropping.	33 Koolohm	17K47610
R ₉	#1		Resistor Fixed, wire-wound; 1 ohm, $\pm 5\%$, 5 watt insulated; axial leads; $1\frac{1}{32}$ " long x $\frac{1}{16}$ " diameter. (Added after serial No. 12395, Order No. 8459-Phila-43).	Filament dropping (transmitter).	33 Koolohm	17K47611
R ₁₀	1		Resistor Fixed, wire-wound; 25 ohms, $\pm 5\%$, 10 watt. Ceramic case. $1\frac{1}{8}$ " long x $\frac{1}{2}$ " diameter. (Replaces R ₆ after serial No. 12395, Order No. 8459-Phila-43).	Filament dropping (transmitter).		17K47607
V ₁	#1	3H6701A	Vibrator VB-7-(*) 4 prong—full wave; non-synchronous; nominal operating voltage: 5.8 volts. Maximum operating voltage: 7.5 volts. Overall dimensions: $3\frac{3}{8}$ " long x $1\frac{1}{2}$ " diameter. Case marked V ₁ , VB-7-(*).	Transformer primary current interrupter.	25 V6160-17X3	48A31519
CH ₁	#2	3C362-3	Choke, R-F 35 turns No. 16 enameled copper wire (inductance: 12.2 μ h at 1000 cycles).	Hash filter.	1 Special	24A31248

CH ₂ .		Also CH ₂ . Choke, R-F Same as CH ₁ .	Hash filter.		
CH ₃	#1	3C362-4 Choke, "A" Filter Two identical units in one can, 5.5 ohms resistance each section (Inductance 9.045 henries at .9 amps).	Filament filter.	1 Special	25B34419
CH ₄	#1	3C362-1 Choke, R-F 3 pie; 185 turns No. 38 single celanese wire per pie. White wax dipped. (Inductance: 1.14 μ h at 300 kilocycles).	B+ r-f.	1 Special	24A31705
CH ₅	#1	3C362-5 Choke, "B" Filter 6 henries at 80 ma., 150 ohms d-c resistance.	B+ filter.	1 Special	25B31297
T ₁	#1	3H5646 Transformer, Power Power transformer with change-over links for 6 volts and 12 volt operation.	Vibrator transformer.	1 Special	25B31296
V ₂	1	Tube, VT-195 Radio Type CK-1005 (metal).	Rectifier.		
V ₃	1	Tube, VT-184 Radio Type VR-90/30 (glass).	Voltage regulator		

#Available in Depot Stock..

33. TABULAR LIST of REPLACEABLE PARTS—b. PLATE SUPPLY UNIT PE-117-(*)—Cont.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
301	1		Assembly, "A" Cable and Lugs 4 conductor, unshielded, rubber covered; 2 conductors of #10 stranded rubber covered wire; 2 conductors of #14 stranded rubber covered wire; red and white leads terminate in lug #29A47853; black and green leads terminate in lug # 29K47857.	Battery cable.	1 Special	1A31858
302	2	3839/2	Assembly, Battery Retainer Strap and Bracket (Short) Cotton webbing, olive drab; $4\frac{5}{8}$ " long, 1" wide; overlap on one end $1\frac{1}{8}$ ", other end has a buckle; strap bracket riveted to strap.	Short strap of assembly for holding Battery BA-39 and Battery BA-40 in position.	1 Special	1X31346
303	1	2Z1582-1	Assembly, Cable and Connector Composed of 8 pin socket and shell, Y cable, battery plugs, housing bushing and gasket.	Battery plate and filament supply cable, connector and plugs.	1 Special	1X31347
304	1	3E4300	Assembly, cable and lugs 10 feet rubber covered 4 conductor cable and two battery lugs.	Cable to vehicular battery.	1 Special	1X31357
305	1	3Z2912	Assembly, Plate and Fuse Clips $1\frac{1}{2}$ " x $2\frac{1}{4}$ " metal plate. Clips to 6 amp. 25 volt tubular, glass enclosed fuse.	Spare fuse holder.	1 Special	1X31448

306	#1	Assembly, Socket Connector GK-253 Brass or aluminum, 8 prong socket, complete with shell and cable clamp; white nickel plated. 2½" long, 1⅜" diameter, 1¼-18 thread on socket end.	Cable connector.	1 Special	1X41220
307	#1	Assembly, Switch Link Plate Bakelite plate; 1⅛" wide, 2¾" long, 4 terminals marked 17, 18, 19 and 20 with two change-over links.	Transmitter and receiver filament change-over link terminal board.	1 Special	1X31352
308	#1	Assembly, Fuse Link Plate 2½" x 1⅝" phenolic plate with four terminals marked 13, 14, 15 and 16, two change-over links and fuse clips.	Change-over link terminal board and fuse receptacle.	1 Special	1X31353
309	2	Bushing Brass, white nickel plated; .5017" long, .3767" diameter; .095" high, .200" diameter mounting stud.	Lid support.	1 Special	43A30857
310	4	Catch, Clip Small, 1½" long. Smooth olive drab finish.	Part of catch clip assembly for holding case cover closed.	1 Special	55A31516
311	8	Catch, Clip Same as (142).	Part of catch clip assembly for holding units together.		

Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS - b. PLATE SUPPLY UNIT PE-117-(*)--Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
312	1		Chassis and Housing Cold rolled steel, white nickel or cadmium finish; punched for parts mounting.	Plate Supply PE-117-(*) chassis.	1 Special	15C31238
313	1	2Z2638	Clamp, Choke Cold rolled steel, white nickel plated. $\frac{1}{2}$ " width. Semi-circular ring, $\frac{3}{4}$ " radii.	Mount choke.	1 Special	42A30929
314	2	2Z2637	Clamp, Vibrator and Capacitor "U" shaped, $1\frac{1}{4}$ " wide, $1\frac{3}{8}$ " high, .031" thick. Phosphor bronze, white nickel plated.	Spare vibrator and capacitor holder.	1 Special	42A30667
315	4	2Z2727-1	Clip, Hold-Down Hook shaped; $\frac{7}{8}$ " x $\frac{9}{16}$ " x $\frac{1}{4}$ ". $\frac{17}{32}$ " mounting hole centers; mounting holes $\frac{1}{8}$ " diameter. Cold rolled steel, smooth olive drab finish.	Part of catch clip assembly for holding case cover closed.	1 Special	55K34338
316	8		Clip, Hold-Down Cold rolled steel, olive drab finish; .086" thick, hook shaped, 1" wide at top; $\frac{13}{16}$ " wide at bottom, two .203" diameter mounting holes.	Part of catch clip assembly.	1 Special	55A38523
317	4	2Z2727	Clip, Hold-Down (Large) Cold rolled steel, olive drab finish; $1\frac{1}{8}$ " long, 1" wide, $\frac{1}{4}$ " loop.	Part of catch clip assembly for holding units together.	1 Special	55K31523

318	1	Case Cold rolled steel, olive drab wrinkle finish; .050" thick, 14 ⁷ / ₈ " long, 11 ¹⁵ / ₁₆ " wide, 4 ³⁵ / ₆₄ " high.	Plate Supply PE-117-(*) case.	1 Special	15D30285
319	1	Cover Cold rolled steel, olive drab wrinkle finish; .049" thick, 14 ³¹ / ₃₂ " long, 12" wide, 1 ³ / ₃₂ " wide sides.	Plate Supply PE-117-(*) cover.	1 Special	15C30289
320	8	Clip, Loop Retainer Same as (146).	Hold catch clip loop when not in use.		
321	1	Clip, Mounting Vibrator 1 ²¹ / ₃₂ " diameter; 2 mounting holes ³ / ₄ " diameter.	Grounding clip for vibrator.	1 Special	42A4215
322	#1	Connector and Bushing Cold rolled steel, cadmium or zinc plated; composed of female collar, rubber sealing nipple, double male connector, bushing and sealing nipple washer.	Mounted on vehicle fire-wall as bushing for A lead.	1 Special	58A49762
323	1	Gasket Neoprene, black; 2 ¹ / ₈ " outside diameter, ²⁵ / ₃₂ " inside diameter, ¹ / ₁₆ " thick; 4 holes, .125" diameter.	Connector plate gasket.	1 Special	37A30243
324	1	Grommet Rubber, brown; ⁹ / ₁₆ " outside diameter, ⁹ / ₃₂ " diameter hole, ¹ / ₄ " high, ¹ / ₁₆ " wide groove along outer edge.	Insulator for leads.	1 Special	37A17361

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS--b. PLATE SUPPLY UNIT PE-117-(*) Cont.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
325	1		Grommet Rubber, black; $1\frac{1}{16}$ " outside diameter, $\frac{3}{8}$ " diameter hole, $\frac{1}{4}$ " high, $\frac{1}{16}$ " groove along outer edge.	Insulator for leads.	1 Special	37K20726
326	2		Handle—Same as (178).	Carrying handle.		
327	1		Hinge, Case Cold rolled steel, olive drab finish; $11\frac{1}{2}$ " long, $1\frac{3}{8}$ " wide.	Hinge for case of Plate Supply PE-117-(*)	1 Special	55K30255
328	1	3H4600-117C/L1	Label, Link Connector White paper, black printing; $4\frac{1}{8}$ " wide, $8\frac{9}{16}$ " long.	Label showing link connections for 6 or 12 volt operation.	1 Special	54B31466
329	1		Link, Socket Cover Music wire, S-shaped; white nickel finish: .051" thick. $1\frac{1}{8}$ " long, $\frac{3}{4}$ " loop opening on each end.	Socket cover retainer.	1 Special	45A38178
330	2		Plate—Same as (186).	Handle ring retainer.		
331	1		Plate, Connector Cold rolled steel, olive drab finish; .050" thick, $2\frac{1}{8}$ " diameter, .843" inside diameter, 4 holes, .156" diameter.	Cable mounting	1 Special	64A47754

332	1	Plate, Cable Clamp Cold rolled steel, olive drab finish; .050" thick, 2 1/8" outside diameter, 3/8" inside diameter, 4 holes, .156" diameter.	Cable mounting	1 Special	64A30268
333	4	2Z7094 Plate, Clip Spacer Brass, smooth olive drab finish; 5/8" thick, 3/8" wide, 1" long; two .203" diameter holes for mounting.	Spacer for catch clip.	1 Special	64A30082
334	1	2Z7092 Plate, Warning .003" opaque white paper; 3"x1 1/4"x1 1/4".	Warning plate: change-over link setting.	1 Special	13A35635
335	2	Ring, Handle—Same as (193).	Handle ring.		
336	1	Rivet, Shoulder Steel, white nickel plated; head: .312" diameter, .046" thick; shoulder .130" diameter, .084" long; stud; .090" diameter, .125" long, counter-bored, .070" deep.	Socket cover.	1 Special	5A38081
337	2	Sleeve Brass, white silver plated; .018" thick, 1 1/4" long, .110" inside diameter, 1/16" opening along length.	Cable connector.	1 Special	43A38494
338	3	2Z8654 Socket, Tube Body, molded black phenolic; 8 phosphor bronze contacts, silver plated. Mounting plate; saddle type, .020" thick steel or cold rolled steel, 1.312" between mounting holes.	Tube and plug-in capacitor socket.	1 Special	9A31229

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—b. PLATE SUPPLY UNIT PE-117-(*)—Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
339	#1	2Z8654-1	Socket, Tube Body; black phenolic. Four #9 phosphor bronze contacts, silver plated. Mounting plate; .035" stainless steel or cold rolled steel hot tinned plated. 1.50" between mounting holes.	Vibrator socket.	3 MIP-4M	9A31234
340	2		Support, Lid Steel, olive drab finish; .081" thick, 5" long, folds at center, swivel at one end, with two holes .156" diameter and .203" hole at other end for mounting.	Cover retainer.	1 Special	55A30435
341	#2	2Z9476	Terminal Strip Three insulated lugs. Cinch #X1464; two lugs for mounting, Cinch #1465; $\frac{1}{2}$ " spacing. $2\frac{3}{8}$ " x $\frac{3}{8}$ " x $\frac{1}{16}$ " bakelite strip.	Tie point.	1 Special	31A31279
342	#1	2Z9476-1	Terminal Strip Three lugs, Cinch #1418; one lug for mounting, Cinch #1465. Bakelite strip: $1\frac{1}{2}$ " long x $\frac{3}{8}$ " wide x $\frac{1}{16}$ " thick.	Tie point.	1 Special	31A31549

343	2Z9476-2	Terminal Strip Bakelite; $1\frac{1}{2}$ " long, $\frac{3}{8}$ " wide, $\frac{1}{16}$ " thick; two #X1464 and one #1465 Cinch lugs mounted on strip.	Tie point.	1 Special	31A31218
344	#2	Terminal Strip Two insulated lugs, on a $1\frac{1}{16}$ " long x $\frac{3}{8}$ " wide x $\frac{3}{32}$ " canvas bakelite strip, wax impregnated. One mounting lug centered on strip for mounting.	Tie point.	1 Special	31A38089
345	1	Wafer Bakelite; overall dimensions: $2\frac{3}{16}$ " long, $1\frac{1}{2}$ " wide, $\frac{1}{16}$ " thick; $1\frac{1}{2}$ " between mounting holes, .133" mounting holes.	Electrolytic insulator and mounting plate.	22 93423	9A22056
346		Wafer, Electrolytic Bakelite wafer, $1\frac{1}{16}$ " mounting centers, $\frac{1}{16}$ " thick.	Insulating and mounting for capacitor C ₉ .	1 Special	9A31245

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS—c. CASE CS-79-(*)

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor Part Number
401	2	3A39/1	Assembly, Battery Retainer Strap and Bracket (Long) 12 $\frac{5}{8}$ " long, 1" wide. Overlap on one end 1 $\frac{1}{8}$ ", other end has binder plate strap riveted to bracket.	Long strap of assembly for holding Battery BA-39 and BA-40 in position.	1 Special	1X31345
402	1	3E1509	Assembly, Cable and Connector Composed of 8 pin socket, shell, and Y cable, battery plugs, housing, bushing and gasket.	Battery plate and filament supply cable, connector and plugs.	1 Special	1X31347
403	1	2B613A IH1	Assembly, Handset Retainer Strap and Bracket 9" long, 1" wide, one male and female snap. Binder plate on each end. Strap riveted to bracket.	Hold handset secure in case.	1 Special	1X31344
404	2		Bracket, Strap Cold rolled steel, white nickel plated; .062" thick, 1 $\frac{3}{16}$ " wide, 1 $\frac{1}{4}$ " long, 19 $\frac{1}{32}$ " base; four holes; .156" diameter in base, two holes; .136" diameter at top.	Fasten strap.	1 Special	7A30921
405			Bushing Same as (309).	Lid support.		

406	Catch, Clip Same as (310)	Part of catch clip assembly for holding units together.	
407	Catch Clip Same as (142)	Part of catch clip assembly for holding units together.	
408	Clip, Hold Down Same as (315)	Part of catch clip assembly for holding case cover closed.	
409	Clip, Hold Down Same as (316).	Part of catch clip assembly.	
410	Clip, Loop Retainer Same as (146).	Holds catch clip loop when not in use.	
411	Clip, Hold Down (Large) Same as (317).	Part of catch clip assembly for holding units together.	
412	Cover, Battery Case Cold rolled steel, olive drab wrinkle finish; .036" thick, 14-3/16" long, 12" wide, 13/16" wide sides.	Cover for case CS-79. (*)	1 Special 15K35246
413	Cushion, Battery Sponge rubber; 3/8" high, 13/4" wide, 4" long.	Cushion for batteries.	1 Special 37A30923

#Available in Depot Stock.

33. TABULAR LIST OF REPLACEABLE PARTS - C. CASE CS-79-(*) - Cont.

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Numbers
414	#1	2Z4922-1	Handle (Same as (178).	Carrying handle.		55K30177
415	1		Hinge Cold rolled steel, olive drab finish; $1\frac{1}{2}$ " wide, $11\frac{1}{2}$ " long.	Hinge for case CS-79. (*)	1 Special	55K34921
416			Plate, Clip Spacer (Same as (332).	Spacer for catch clips.		
417		2Z7229-3	Plug Bakelite, $1\frac{1}{8}$ " diameter, $1\frac{1}{2}$ " thick; 5 brass prongs, nickel plated.	Plug for Battery BA-39.	1 Special	28K30253
418		2Z7229-2	Plug Bakelite, $1\frac{1}{8}$ " diameter, $1\frac{1}{2}$ " thick; four brass prongs, nickel plated.	Plug for Battery BA-40.	1 Special	28A30252
419			Ring Handle Same as (193).	Handle ring.		
420		2Z8653	Socket and Shell Phenolic socket, 8 contacts silver plated, aluminum shell, $1\frac{1}{4}$ -18 thread on receptacle end, $\frac{3}{4}$ -20 thread on cable end, $2\frac{3}{8}$ " long.	Cable connection for battery supply to BC-659. (*).	1 Special	9A30441

421	2	Strap Cotton webbing, olive drab; 5½" long, 1" wide; buckle on one end. Support, Lid Same as (339). 1-CK-235 Hardware Kit Composed of: 4-#3S6990 Screws; ¼-20 thread x ¾" long; hexagonal head machine screw; white cadmium plated. 6-#3S9693 Screws; ¼-20 thread x 1" long; hexagonal head machine screw; white cadmium plated. 4-#3S9694 Screws; ¼-20 thread x 1½" long; hexagonal head machine screw; white cadmium plated. 6-#3S9695 Screws; ⅝-24 thread x 1¼" long; hexagonal head machine screw; white cadmium plated. 8-#4S7671 Lockwasher; #8 split; ⅛" outside diameter x .166-.171" inside diameter x ⅝" x .047" thick; carbon steel, white cadmium plated	Battery retainer. Cover retainer. Screws, nuts, lock- washers, washers and hook for maintenance use.	1 Special	35B30924
422					
501					
27					

#Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS — c. CASE CS-79-(*) — Cont.

Part. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Ref. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
501	(Cont'd.)		6-#4S7601 Washer; $1\frac{1}{16}$ " outside diameter x $1\frac{7}{64}$ " inside diameter x .0320" thick; cold rolled steel, white cadmium plated.		14	
			6-#4S7605 Washer; $\frac{3}{8}$ " outside diameter x $2\frac{1}{64}$ " inside diameter x .0320" thick; cold rolled steel, white cadmium plated.			
			8-#2S7003 Nut; 8-32 thread x $\frac{5}{16}$ " diameter across flat x $\frac{1}{8}$ " thick; hexagonal; cold rolled steel, white cadmium plated.		30	
			14-#4S7693 Lockwasher; $\frac{1}{4}$ " split; $2\frac{7}{64}$ " outside diameter x .260-.270" inside diameter x $\frac{5}{64}$ " x .062" thick; carbon steel, white cadmium plated.		27	
			7-#4S7654 Lockwasher; $\frac{5}{16}$ " split; $2\frac{7}{64}$ " outside diameter x .323-.333" inside diameter x $\frac{1}{8}$ " x .062" thick; carbon steel, white cadmium plated.		27	
			1-#3S9696 Screw; $\frac{5}{16}$ -24 thread x 2" long; hexagonal head machine screw; white cadmium plated.		30	

8-#3S9697 Screw; 8-32 thread x $\frac{3}{4}$" long; slot- ted roundhead machine screw; white cadmium plated.	14-#2S7022 Nut; $\frac{1}{4}$-20 thread x $\frac{1}{16}$" diameter across flat x $\frac{3}{16}$" thick; hexagonal; cold rolled steel, white cadmium plated.	7-#2S7023 Nut; $\frac{5}{16}$-24 thread x $\frac{1}{2}$" diameter across flat x $\frac{17}{64}$" thick; hexagonal; cold rolled steel, white cadmium plated.	6-#4S7557 Washer; $\frac{3}{8}$" outside diameter x $\frac{11}{64}$" inside diameter x .0320" thick; cold rolled steel, white cadmium plated.	Hook Steel, electro zinc; J-shaped; overall dimensions: $\frac{3}{4}$" wide x $2\frac{1}{4}$" long, #12 B.W. gauge; two holes .1695" diameter for mounting.	Clamp Steel, electro zinc; #20 W & M gauge; overall dimensions: $\frac{1}{2}$" wide x 3" long; two holes .187" diameter for mounting.	Nut 8-32 thread, $\frac{5}{16}$" diameter across flat, $\frac{3}{8}$" thick; hexagonal; cold rolled steel, white cadmium finish.	General.	42A60812	42A60814	2S7003	30 30 30 14
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502 #24

* Available in Depot Stock.

33. TABULAR LIST of REPLACEABLE PARTS c. CASE CS-79-(*) Cont.

Par. 33

RADIO SETS SCR-609-A AND SCR-610-A

TM 11-615

Rel. No.	Quan. in Equip.	Signal Corps Stock Number	Name and Description of Part	Function	Mfg. Code and Type No.	Contractor's Part Number
503	#30		Rivet 5/16" long x .122" diameter; cold rolled steel, polished nickel finish.	General	34 S-1793 2 1/2	5S7707
504	2		Screw 4-40 thread, 5/16" long; slotted round head machine screw; brass; white nickel finish.			3S8023
505	#3		Screw 3-48 thread, 5/16" long; slotted binderhead machine screw, cold rolled steel, black nickel finish.	Mount Meter, M1.		3S6336
506	#10		Screw #4-24, 5/16" long, self tapping slotted stovehead; sheet metal; white cadmium finish.	General.	35 A	3S7523

#Available in Depot Stock.

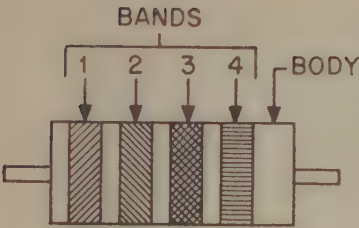
LIST OF MANUFACTURER'S NAMES AND ADDRESSES

<i>Mfr. No.</i>	<i>Name</i>	<i>Street Address</i>	<i>City</i>	<i>State</i>
1	Galvin Manufacturing Corporation	4545 W. Augusta Blvd.	Chicago	Illinois
2	Aerovox Company		New Bedford	Massachusetts
3	American Microphone		Los Angeles	California
4	American Phenolic	1830 S. 54th Street	Cicero	Illinois
5	Automatic Electric	1033 W. Van Buren Street	Chicago	Illinois
6	Brach, L. S. Manufacturing Corp.	55 Dickerson Street	Newark	New Jersey
7	Centralab	900 E. Keefe Avenue	Milwaukee	Wisconsin
8	Chicago Telephone Supply		Elkhart	Indiana
9	Cinch Manufacturing Corporation	2339 W. Van Buren Street	Chicago	Illinois
10	Cornell-Dubilier	1000 Hamilton	South Plainfield	New Jersey
11	Crowley Company		West Orange	New Jersey
12	Daniels, C. R.	1705 S. State Street	Chicago	Illinois
13	Erie Resistor Corporation	2644 W. 12th Street	Erie	Pennsylvania
14	Gates Washer Company	2949 N. Elston Avenue	Chicago	Illinois
15	Goat Metal Stamping	314 Dean Street	Brooklyn	New York
16	International Resistance Company	401 N. Broad Street	Philadelphia	Pennsylvania
17	Jensen & Son	5942 W. Belmont Avenue	Chicago	Illinois
18	Lapp Insulation Company		Leroy	New York
19	Lewis Awning	214 W. Burlington	LaGrange	Illinois
20	Littlefuse Corporation	4757 N. Ravenswood	Chicago	Illinois
21	Kellogg Switchboard	6650 S. Cicero Avenue	Chicago	Illinois
22	Mallory, P. R. & Company		Indianapolis	Indiana
23	Micamold Corporation	1087 Flushing Avenue	Brooklyn	New York

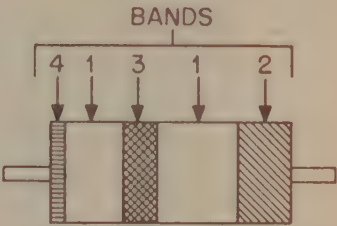
LIST OF MANUFACTURER'S NAMES AND ADDRESSES (Cont'd.)

<i>Mfr. No.</i>	<i>Name</i>	<i>Street Address</i>	<i>City</i>	<i>State</i>
24	Muter Company	1255 S. Michigan Avenue	Chicago	Illinois
25	Oak Manufacturing Company	1260 Clybourn Avenue	Chicago	Illinois
26	Sangamo Electric Company		Springfield	Illinois
27	Shakeproof Lockwasher	2501 N. Keeler	Chicago	Illinois
28	Sickles, F. W.		Springfield	Massachusetts
29	Stackpole Carbon Company	Elk County	St. Mary's	Pennsylvania
30	United Screw and Bolt	2513 W. Cullerton Street	Chicago	Illinois
31	Ward Products Corporation	1523 E. 45th	Cleveland	Ohio
32	Carborundum Corporation	Global Division	Niagara Falls	New York
33	Sprague Specialty Company		North Adams	Massachusetts
34	Thomson, J. L. Manufacturing Co.	17 N. Loomis Street	Chicago	Illinois
35	Parker-Kalon Company	200 Varick Street	New York	New York
36	Sylvania Electric Products, Inc.		Emporium	Pennsylvania
37	Rathcon Product Corporation	445 Lake Shore Drive	Chicago	Illinois

35. RMA STANDARD COLOR CODE CHARTS
For Resistors



METHOD 1

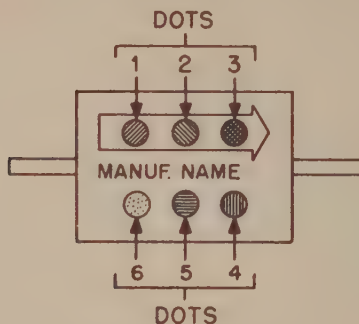


METHOD 2

COLOR	1st Band	2nd Band	3rd Band	4th Band
	<i>1st Digit</i>	<i>2nd Digit</i>	<i>Decimal Multiplier</i>	<i>Tolerance</i>
Black	0	0	1	
Brown	1	1	10	
Red	2	2	100	
Orange	3	3	1,000	
Yellow	4	4	10,000	
Green	5	5	100,000	
Blue	6	6	1,000,000	
Violet	7	7	10,000,000	
Gray	8	8	100,000,000	
White	9	9	1,000,000,000	
Gold	...	...	.....	± 5%
Silver	...	...	.....	± 10%
No Color	...	...	.....	± 20%

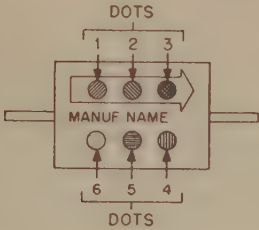
RMA STANDARD 6-DOT COLOR CODE CHART

For Capacitors (Molded Mica)



	1st Dot	2nd Dot	3rd Dot	4th Dot	5th Dot	6th Dot
Color	<i>1st Digit</i>	<i>2nd Digit</i>	<i>3rd Digit</i>	<i>Decimal Multiplier</i>	<i>Tolerance</i>	<i>Voltage</i>
Black	0	0	0	1	....	....
Brown	1	1	1	10	1%	100v.
Red	2	2	2	100	2%	200v.
Orange	3	3	3	1,000	3%	300v.
Yellow	4	4	4	10,000	4%	400v.
Green	5	5	5	100,000	5%	500v.
Blue	6	6	6	1,000,000	6%	600v.
Violet	7	7	7	10,000,000	7%	700v.
Gray	8	8	8	100,000,000	8%	800v.
White	9	9	9	1,000,000,000	9%	900v.
Gold	....	....	....	0.1	...	1,000v.
Silver	....	....	....	0.01	10%	2,000v.
Body	....	....	....	.....	20%	500v.

AMERICAN WAR STANDARD 6-DOT COLOR CODE CHART
For Capacitors (Molded Mica)

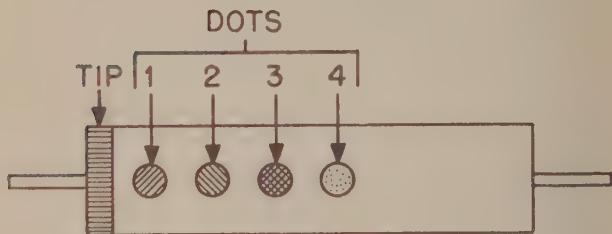


Color	1st Dot	2nd Dot	3rd Dot	4th Dot	5th Dot	6th Dot
	<i>1st Digit</i>	<i>2nd Digit</i>	<i>3rd Digit</i>	<i>Decimal Multiplier</i>	<i>Tolerance</i>	<i>Characteristics</i>
Black	0	0	0	1	$\pm 20\%$	*A
Brown	1	1	1	10		B
Red	2	2	2	100	$\pm 2\%$	C
Orange	3	3	3	1,000		D
Yellow	4	4	4	10,000		E
Green	5	5	5	100,000		F
Blue	6	6	6	1,000,000		G
Violet	7	7	7	10,000,000		
Gray	8	8	8	100,000,000		
White	9	9	9	1,000,000,000		
Gold	....	....	....	0.1	$\pm 5\%$	
Silver	....	....	....	0.01	$\pm 10\%$	

- *A—Ordinary Mica By-pass.
- B—Same as A—Low Loss Case
- C—By-pass or Silver Mica Capacitor (± 200 parts/Million/C)
- D—Silver Mica Capacitor (± 100 Parts/Million/C)
- E—Silver Mica Capacitor (0 to +100 Parts/Million/C)
- F—Silver Mica Capacitor (0 to +50 Parts/Million/C)
- G—Silver Mica Capacitor (0 to -50 parts/Million/C)

COLOR CODE CHART

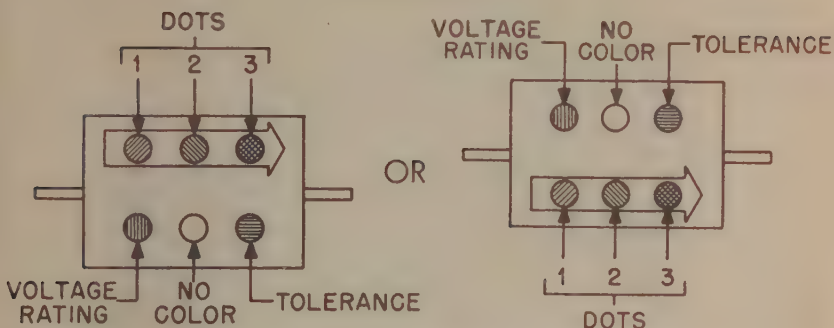
For Capacitors (Tubular Ceramic)



Color	Tip	1st Dot	2nd Dot	3rd Dot	4th Dot
	<i>Temperature Coefficient</i>	<i>1st Digit</i>	<i>2nd Digit</i>	<i>Decimal Multiplier</i>	<i>Tolerance</i>
Black	0	0	0	1	...
Brown	.00003 Neg.	1	1	10	1%
Red	.00008 "	2	2	100	2%
Orange	.00015 "	3	3	1,000	3%
Yellow	.00022 "	4	4	10,000	4%
Green	.00033 "	5	5	100,000	5%
Blue	.00047 "	6	6	1,000,000	6%
Violet	.00075 "	7	7	10,000,000	7%
Gray		8	8	0.1	
White		9	9	0.01	10%

3-DOT COLOR CODE CHART

For Capacitors



COLOR	1st Dot	2nd Dot	3rd Dot	Tolerance	Voltage Rating
	1st Digit	2nd Digit	Decimal Multiplier		
Black	0	0	1		
Brown	1	1	10	1%	100v.
Red	2	2	100	2%	200v.
Orange	3	3	1,000	3%	300v.
Yellow	4	4	10,000	4%	400v.
Green	5	5	100,000	5%	500v.
Blue	6	6	1,000,000	6%	600v.
Violet	7	7	10,000,000	7%	700v.
Gray	8	8	100,000,000	8%	800v.
White	9	9	1,000,000,000	9%	900v.
Gold	...	...	0.1		1000v.
Silver	...	...	0.01	10%	2000v.
Body	...	...	...	20%	*

*When no Color is indicated the Voltage Rating may be as low as 300 volts.

Tubes

2 - 1291 - 3E7
4 - 1294 - 3D6
1 - 1294 - 124
1 - 12H4
4 - 12H5
1 - 12C6

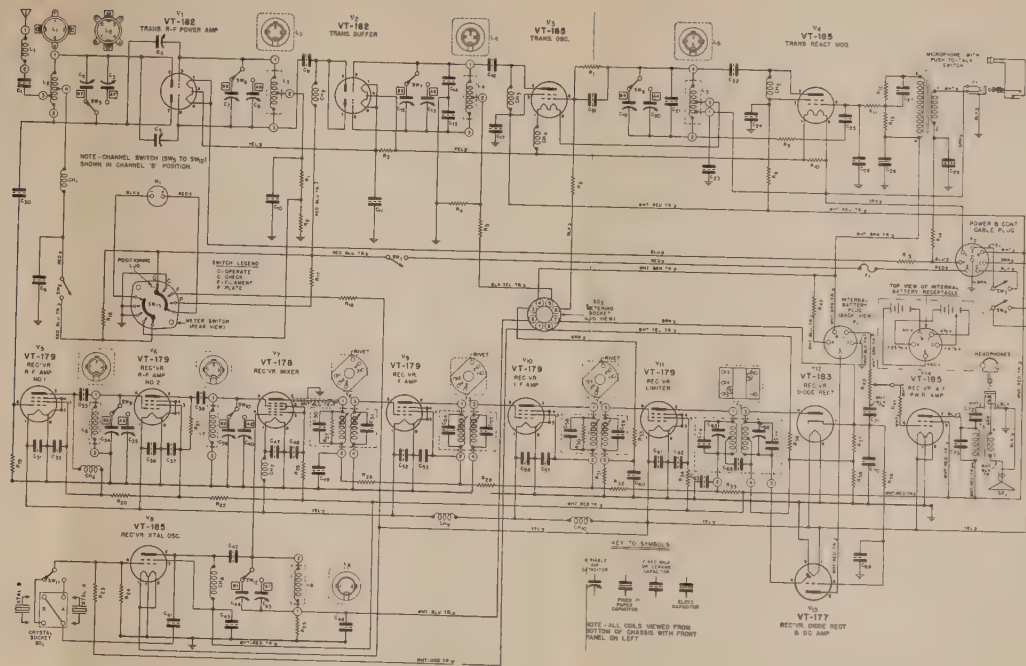


Figure 24.1. Radio Receiver and Transmitter BC-659-(*).—Schematic Diagram

